

Turned breakers include Peter on 01-995 1548.



Downtime

by Chad

Getting micro message home — with no strings

THE gentleman in my picture is out fiddling with one of the props from "The Empire Strikes Back". This is a design for an electronic stringless guitar that is on show at the Design Centre in Haymarket as part of the new Microelectronics Come Home exhibition.

The instrument, called a Syntar, was designed by Mark Morrison of North Staffordshire Polytechnic, several of whose colleagues have also included in this touching practice of building mock-ups of wondrous electronic machines before they have discovered how to make them work, a habit I call writing out the postcards you're going to send back from Bodelsgrove. There was even a cardboard robot vacuum cleaner that would (they hope) have a magical device to stop it from running over the cat.

Considering how uninspired was the Design Council's last microchip exhibition (on office machines I didn't expect much from this one, intended to show the forthcoming impact of electronics on people in their lives away from work. There were the expected micro-controlled washing machines and central heating controllers in between exhibits of rather excessive whimsy.

In addition to the cardboard musical instrument were bits of flushing jewellery, a door bell that played tunes from a repertoire of several dozen, and a

model train controller that appeared to do nothing at all. There was just one train that went round and round, getting gradually slower as it became tired.

There was also a computer for bookies, an elaborate chess-playing machine designed by International Master David Levy, and a car computer from Smith's Industries that told you your instantaneous fuel consumption. With this you can spend all your time staring at the readout and adjusting your speed for greatest economy, so you won't have to be distracted by looking at the road at all.



This prototype guitar without strings is a Syntar, designed by Mark Morrison of North Staffordshire Polytechnic. It is on show at the Microelectronics Come Home exhibition.

One of the great ideas men of our age

IT was sad to hear of the death of Marshall McLuhan, one of the most interesting of our age's ideas men. He is best known now for his appearance in Annie Hall, when Woody Allen leads him on to the screen to deflate a pseud in a cinema queue who has been dropping his name.

In the Sixties when he first rose to fame he was chiefly noted for the obscurity of his ideas, the butt of many a cartoon in the New Yorker magazine along the lines of "I'm terribly proud of

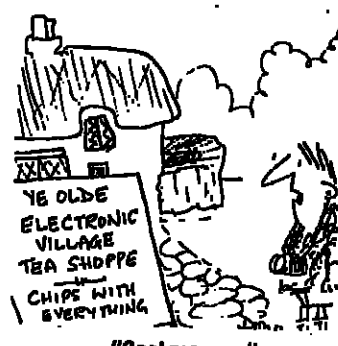
my son — he understands Marshall McLuhan".

Long before our present preoccupation with technical change McLuhan was proclaiming that the world would be transformed by electronics. Unlike many pundits today, he actually analysed this thesis, and came up with reasons why differences in media should have so much effect.

It is by no means certain that he was right, but at least his analyses were stimulating.

His characterisations of media as "hot" or "cool" (radio is hot while television is cool) were not only generalisations, but difficult to interpret or extend. Whether videotape is a hot or cold medium I have no idea.

It is ironic that someone who devoted his whole life to the theory of communication should have so much difficulty in communicating. Still, it is an irony which McLuhan, with his sense of humour and gift for self-mockery, would have appreciated.



"Cool man..."

GILB'S MYTHODOLOGY

Motivation by competition

ONE of the fundamental reasons for over-complex designs today is lack of real competition for the designer.

Our designers are not encouraged to stretch their imagination and to increase their professional competence. Why should they? Their design suggestions will be accepted and will function reasonably well. At least it will take years of both project implementation and operation before critical weaknesses are discovered.

We have a lot to learn from the building architecture competition model. So why don't we put all our important design projects out to open competition from the many consultants and computer service and hardware suppliers?

If they are as good as they claim to be, designers should have no objection to presenting their best total design solutions at their own cost, and being judged and presented (if they win one of the major prizes) in public.

First prize-winners will be awarded contracts for the detailed architecture and the follow-up of the implementation. Second, third and other top places will get cash awards, and we will make use of some of their best ideas.

The competition principle and the simplification goal can be applied to any one or more of the system attributes. For example, we can ask to simplify the unknown elements of cost, time or performance.

We can ask for a reduction in the number of new and untested components, or of untested components (such as software modules) in the working version of the system, or for a reduction in the number of critical design goals and their

not constrain the designers to any particular architecture.

In one recent large-scale architecture simplification exercise, I was faced with the implicit assumption that the solution had to be in terms of the present large-scale computer system and its database management software.

The final architectural solutions were great simplifications and attacked the ultimate goal rather directly.

The new system architecture consciously avoided the large-scale systems in favour of smaller hardware increments. It bypassed "database" in favour of concentrating on the area of greatest employee impact (data entry).

Policy

Let me try to make this issue even more concrete by suggesting some policy ideas. Compare with your present policy:

1. All major (over one year) projects shall be designed with major architecture exploration by means of open competition.

2. At least one independent architect shall be considered.

3. At least three architectural alternatives shall be judged.

4. The competition shall be announced by public trade press announcements (if necessary, using confidential sources as confidential intermediaries).

5. The company shall reward the rights to use all ideas submitted in any combination.

6. We shall retain the right to share all submitted designs for background information on the competition with any design consultants we wish to employ.

The best three designs shall be given cash awards and public recognition.

7. Judges shall be personally, organisationally and economically



Tom Gilb is an independent consultant, lecturer and author on computing topics.

independent of any competitors.

9. The first prize-winner shall be offered the opportunity to rework the final architecture according to revised company directives and in the light of other ideas from other competitors.

I don't think many readers have the moral or professional courage to throw their architectures into open competitions like this and I can hear the long list of reasons why not, even as I type these words.

Perhaps some of the more timid would consider trying out the idea by at least arranging an in-house competition just to get the feel of it.

Insecure

I can promise you the results in advance. If you are trying halfway, you will not have known about it.

At least you will be measured on at least one interesting attribute, as the "original". Some designs will be an order of magnitude better than your present ideas.

Of course, there are those insecure designers who know that they are incompetent and they will not encourage or join in such competition. This is a virtue which management must control — not design.

Gilb's hypothesis: If you make use of design architecture competition you will improve your results more than by any other form of optimisation or simplification. If you don't use competition, you will never know you are missing it.

FOCUS

Language of communication

RELIABLE forecasts suggest that communications could be the theme of 1981. Getting it together in telecom terms involves interfacing Plessey with Ethernet, Burcon with the Cambridge Ring and most probably the DPM with the latest Plessey Glossary of Telecommunications.

For many DP managers, communications is typically a matter of speaking down the telephone, shouting down the corridor or remonstrating with the site engineers.

DPMs are less likely to be involved in COM2 voice concentrators, telnet links and British Telecom tariff rates than in a ready supply of inter-departmental memo pads and ready access to the office telex machine.

Anyone — and increasingly that looks like being all of us in computing — getting involved in telecom will first have to learn the language.

The language of communication is limited to acronyms, numbers and cryptic names of gods, goddesses, Katharine and Monicas and little chance in competition with Anne, Di and Sue.

At the Telecommunications Managers' Conference last year, the world appeared as little more than a network of telecom lines, channels, PABXs and message-switching stations.

The rapid development of low-cost electronics, fast transmission rates and economical PTT costs has encouraged the industry to market an increasing array of data communication products, modems and related software.

On the customer side, there is a growing need to keep up with it, not overlook the opposition in the information processing stakes.

British Telecom has got the communication message already. Mail and telecommunications are now separate organisations, the

postmen obviously believing that competing with cable network timescales is both unfair and impractical.

In turn, it seems the days of the cable are numbered. Fibre optic technology is now all the telecom rage along with wide-band channels.

It is unclear where all this technology will leave the DPM. Certainly, a lot of education and training will be needed in the not-top-distant future.

Information technology will not be able to escape the communication link, whether private or public networks are used.

Not will the DPM escape contact with such thorny areas as cross-border data flows, electronic fund transfer and the ubiquitous System X.

The problem posed is: Where does the DP team look for its datacom training? Not to the State of The Art conferences and seminars. A do-it-yourself approach to datacom is infeasible. Learning the necessary skills will require on-site training or attending practical telecom courses and workshops.

TEN YEARS AGO

From Computer Weekly of January 14, 1971

BRITISH Overseas Airways Corporation (BOAC) is one of four major international airlines whose withdrawal means the end of plans to implement the proposed BTCA-TTT joint ticket reservation scheme announced at the end of last year. BOAC is joined by Lufthansa of West Germany, Air France and Alitalia.

Lord Cromer has been replaced as chairman of IBM Holdings Ltd. Lord Cromer is the new British Ambassador to

Washington and of year-old Malcomson, previously president of IBM World Trade Corp, and a vice-president of International Business Machines Corp, has been on the UK board since 1964. "Computer personnel are suffering from the twin effects of low salary increases and rising inflation," according to Management Selection Ltd, who report that IBM's November 31 and 30 contracts only 230-2100 increase last year.

NEWS IN BRIEF

Univac ousts ICL at Rediffusion

A UNIVAC 1100/61 is replacing two ICL machines, a 1903A and 1901T, at the Rediffusion Group. The 1100/61 will handle all the processing for the TV rental and with program conversion out at Univac's Paddington, London, conversion centre.

A subscribers' accounts system will be written jointly by Univac and Rediffusion for a 1100/61.

The X factor

LINE transmission and multiplexing equipment worth £11 million has been ordered by British Telecom from GEC Telecommunications for delivery during 1981. The equipment will be made in Coventry and include both analogue and digital systems.

Satellite galaxy

APPROVAL has been given by the US Federal Communications Commission for the construction of 25 and the launch of 20 domestic communications satellites. Three newcomers, Southern Bell, Hughes and GTE South, were included in the award, though overall established operators with proven track records were favoured. These included RCA, Western Union, Comsat General, SBS, AT&T and ITT.

Video briefings

DELTAK, publisher of the latest training and information programs, has set up a unit providing video briefings for managers and executives who are trying to devise new strategies to cope with the explosion of information in today's business environment.

Technology forum

A NATIONAL forum to show industry's approach to technology is being advocated by Dr Graham Bamber, of Durham University business school in its Industrial Relations Journal. The forum would consist of government, industry and trade unions, and would be funded jointly by the three sides.

CTL division

THE all-British computer company CTL has established an Applied Systems Division which will be responsible for the design of hardware and systems software and the development of applications software for CTL computers. The new division is headed by Dr Goates, formerly of Software Sciences.

Apple service

SERVICE of Apple computers throughout the US is to be taken on by Bell & Howell, a troubleshooting and full repair service to be provided by the company's service organisation which is to be expanded to task. No similar operation planned for the UK by Bell & Howell.



Planning a night to remember are (standing): Rupert Bayfield and David Bannell; (seated): John Brown and Ian Holden. Bayfield joined De La Rue Bull in 1961 as an operator and progressed to become manager of Honeywell's Software Services Department. He is co-founder of the VLI group. Bannell, as personnel officer with De La Rue Bull, 1961-65, was instrumental in recruiting the key new staff of that period, and is now London regional manager of MSL, an executive selection consultancy. Brown started at De La Rue Bull in 1961 as a programmer, leaving in 1967 to join ICL, where he is now employed in a senior role. Holden was assistant manager of the Technical Services Department of De La Rue Bull in the early Sixties, and is now European database manager for Honeywell Controls.

Twenty years on — Swanning with the De La Rue Bullians

THE four men in the top-of-page picture have been plotting to make Friday, January 30 a night to remember. And if you worked for De La Rue Bull and have not yet been fished into their nostalgia net, you should turn up at The Swan, off Southampton Row in London, where you will find what has happened to the old gang, 20 years on.

The date commemorates the 20 years since two of this particular Gang of Four joined De La Rue Bull as trainee programmers. About ten years ago, Ian Holden and John Brown decided they would like to celebrate the anniversary of their initiation at the same pub they frequented in the De La Rue Bull heydays.

Abetted by former personnel manager at the company, David Bannell, and Rupert Bayfield, who had originally joined as an operator, they rounded up some of their former colleagues for what has now become an annual event.

The story of De La Rue Bull goes back further than the Holden/Brown anniversary. It was in July 1959 that the first five staff were apt to Paris for a training course.

A host of computing luminaries emerged from De La Rue Bull and are now working in senior positions in many companies. Of the Gang of Four, Bannell is a senior executive with MSL management consultants; Bayfield is managing director of the VLI group of computer services companies; Holden is European database manager for Honeywell Controls; and Brown has a senior position with ICL in Bracknell.

The first five who joined De La Rue Bull in 1959 have all moved on: Brian Higgins to Calcomp, Malcolm Wates to PA, Ron Cook with GRISSCO, Derek Price with Comshare in Canada and Graham Thorne, still within the family, with Honeywell.

One of the highest climbers has been Ian McNaught-Davies, managing director of Comshare (and well-known mountaineer). For future events, contact David Bannell at MSL, 52 Grosvenor Gardens, SW1W 0AW. Tel: 01-730 0255.

RUPERT BAYFIELD, now group managing director of VLI, joined De La Rue Bull in 1961 from ICL as an operator, and this photograph was taken in the Sixties for a De La Rue Bull brochure. Bayfield is operating a Gamma 30, which was also marketed by ICL as the 1800 series.

Double demand for non-impact printers predicted for 1985

WORLDWIDE demand for non-impact printers will more than double between now and 1985 by which time international shipments will be worth \$2,700 million.

Over the same period, shipments in the US of printers costing \$1,000 or less will jump from just over \$100 million to more than \$300 million.

These predictions feature in reports from two US consultancies, Strategic Business Services and Creative Strategies International. The two firms are unrelated, though they are very near neighbours in San Jose, California.

SBS' study on non-impact printers analyses the future of seven technologies — electrophotographic, thermal, ink jet, dielectric

and plain paper electrostatic, electrosensitive discharge, electrolytic and magnetic.

The electrophotographic embraces high performance/high cost laser printers of the type manufactured by IBM, Siemens and Xerox. SBS predicts that prices of these units will tumble to as little as \$25,000 and that annual sales will jump from 160 units in 1979 to 16,000 in 1985.

Thermal printer shipments will grow at a rate of 8% a year to a level of \$500 million by 1985. Main application areas will be personal and small business computers.

The Creative Strategies report on low-cost printers covers both non-impact and impact units that print at least 40 columns and cost \$1,000 or less.

US shipments by value of non-impact printers, all employing

sites. Shipments will be worth \$600 million in 1985.

Dielectric printers, like the Honeywell high speed Page Printing System and smaller units built by Houston Instruments, will experience a more than two-fold increase in shipments, from \$95 million to \$205 million.

More than 300,000 of these units will be shipped in four years' time.

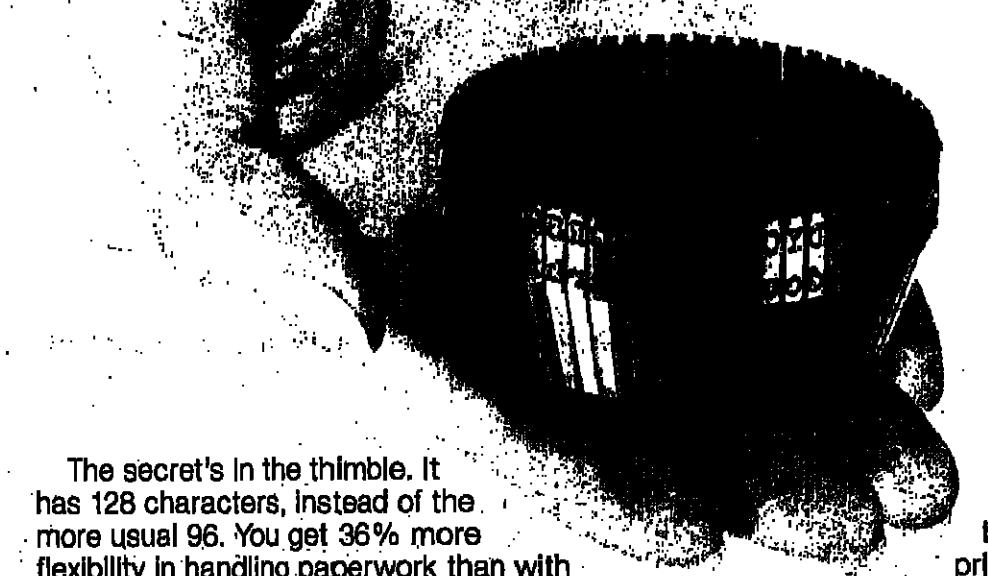
*Non-Impact Markets and Technologies for distributed printing, 120pp, \$950. Strategic Business Services Inc, 4320 Stevens Creek Blvd, Suite 215, San Jose, California 95129, USA. Tel: 0101/408/243-8121.

Low-Cost Computer Printers, 83pp, \$1195. Creative Strategies International, 4340 Stevens Creek Blvd, Suite 275, San Jose, California 95129, USA. Tel: 0101/408/249-7550.

Two-fold increase

The report envisages their use by the mid-80s in large word processing installations and distributed processing applications as well as at large data processing

You have every reason in the world to switch to NEC's "thimble" printers. Here are 128 of them.

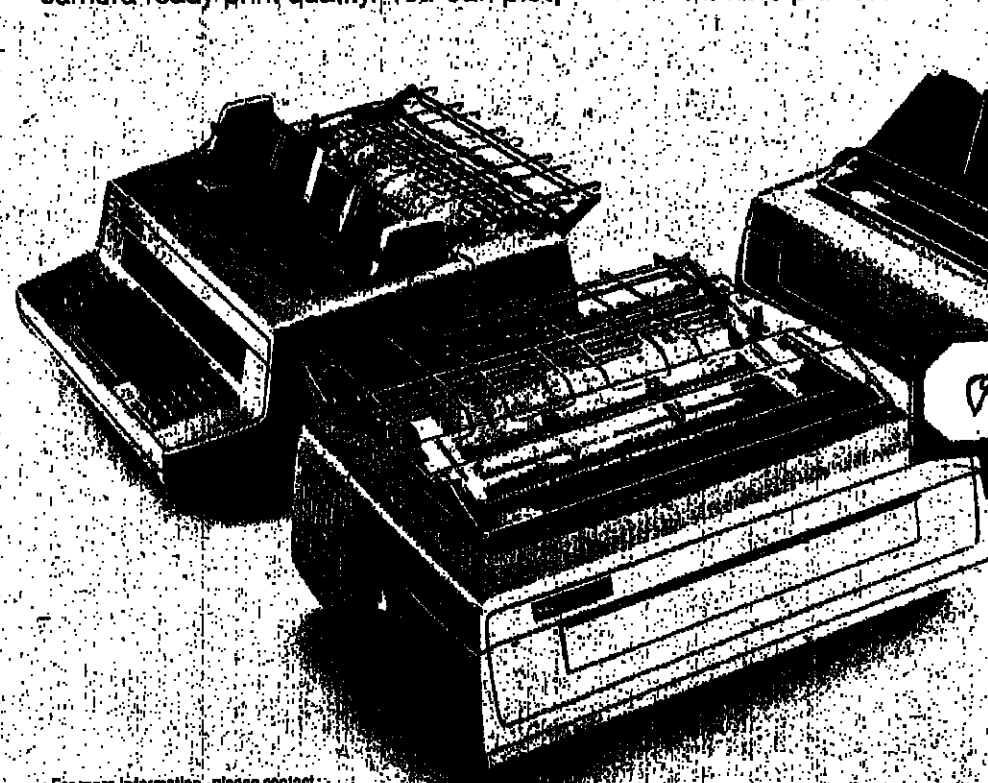


The secret's in the thimble. It has 128 characters, instead of the more usual 96. You get 36% more flexibility in handling paperwork than with most of the daisy-wheel and golf-ball print elements of other printers. In English, French, German, Scandinavian, name it. And one thimble will last more than 30 million clear impressions. Quietly, quickly.

And that's just for openers. Thanks to our own LSI and microprocessor technology, the NEC Spinwriter Series 5500, which comes in three models, gives you camera-ready print quality. You can plot,

graph, superscript, subscript. Tab horizontally or vertically. And print bidirectionally.

Changing thimbles and ribbons is a snap. Also, system modularity means your Series 5500 printer will grow as your requirements grow. And one of the nicest things about it all is that it really won't cost you a thing to switch. 7 Interface capabilities, including those for Diablo, QUME and Centronics, means the NEC Spinwriter is ready to work in your system right away. Get close to our thimble printers now.



NEC
Nippon Electric Co Ltd
Tokyo, Japan

For more information, please contact:
NEC Telecommunications Europe Co., Ltd, NEC House, 150 Oldbuck Street, London NW11 5HP, UK. Tel: 01-586-8100. Telex: 281514.
Thames Systems Ltd, Thames Park Industrial Estate, Thames Valley Park, Uxbridge, Middx UB8 3PH. Tel: Thames 064 42115471.



Arthur Carr (right), president of Codex, discusses the deal with Paul Rosenbaum, vice-president.

Codex buys its UK distributor for £1million

by Donald Kennell

GROWING investment needs at Croydon-based Cole Electronics have persuaded parent company R. H. Cole to sell off the data products division to its major supplier, the US company Codex.

On completion of the £1 million cash deal last week, R. H. Cole chairman Dr Jack Barrett said his company had initiated the sale because the data products division's demands for working capital had threatened to inhibit the development of other parts of the group.

Codex, which claims to be the

world's largest independent supplier of data communication equipment, is a subsidiary of Motorola. Its president, Arthur Carr, with vice-presidents Paul Rosenbaum and Jim Storey, join the board of the UK company, now renamed Codex UK.

Managing director Rodney Turvey and commercial director Derek Surry remain with Codex UK.

Codex products already account for 90% of the company's sales, but some component sub-assemblies and transmission equipment will continue to come from the

remaining part of Cole Electronics and patching and test equipment from Dynatech, Digilog, International Data Sciences and Bradley Telecommunications in the US.

Data Products Division sales grew an average 37% a year to £3 million between 1977 and 1979, the last year for which figures are available, while profits reached £405,000. Codex grew at over 40% a year in the same period, following several years' growth at 60% a year, but its actual sales and profit figures are not available because they are merged with Motorola's.

Carr said: "We expect to outpace the general growth of our markets as we have in the past."

Rapid growth

One third of Codex sales are outside the US, and European dealers are supported from Brussels. There are no current plans for further takeovers, although since Motorola acquired Codex in 1977, Codex has bought companies in Toronto, Canada, and Huntsville, Alabama, and set up a further company in Phoenix, Arizona.

The acquisitions have brought feedback to Motorola from new markets and have already resulted in custom VLSI devices being produced for Motorola. Motorola and Codex see themselves as being in the information transport business, which they expect to grow rapidly in the 1980s, and are aiming for leadership in the market on a broad front, rather than concentrating on a specialised segment, which could be done with far smaller investment.

Information transport would

compete effectively with transport as energy costs rise.

Viewdata does not form part of this plan, although Carr is aware of the potential of viewdata and similar information processing systems would grow widely as they grew cheaper.

A recent report from Stone Planning Institute of Boston suggested that vertical integration, for example by a manufacturer buying its distributors, was only a p idea when the market was only growing not shrinking.

Carr reacted by saying vertical integration was unstable in any environment. There were always difficulties, with differences between people, cultures, technology in processes, but Motorola was not at it and had had very little (and after any of its acquisitions).

Networks

Turvey said he expected a greatest market growth to be private company networks - the one his company was to test for the Trustee Savings Bank, linking over 1,000 branches using Codex network equipment, switching equipment and modems worth £2 million.

Other banks, insurance companies and commercial organisations generally were likely to use similar networks in substantial numbers over the next four or five years. Codex had recently launched a major range of integrated communications products based on an advanced communications processor to cater for a market, although smaller companies would continue to provide Codex's bread and butter.

Service for buyers holds information on 15 million products

AN online information retrieval service for buyers in industry has been set up in London with financial backing from the Department of Industry. The File of Industrial Data (FIND) is claimed already to contain information on 15,000,000 products and components of interest to manufacturers, and uses a software package that has been designed for the purpose from scratch.

FIND is intended mainly for telephone enquirers, buyers in industrial firms who need help in finding products. No consumer products are included.

Teams of operators answer the phone and obtain the needed information on a VDU linked to a dedicated CMC Reality system. Users who want to access the data directly with their own dial-up terminals can do so.

Enquirers pay nothing for the information, but their names and addresses are passed on to the firms supplying the data, who pay a basic charge of £750 a year for which they can load 250 of their products into the index. Extra products are charged at between £1 and £2 each.

The Reality, which currently has 100 megabytes of disc, was chosen for its operating systems.

GABAY: "25,000 companies are already supplying data"

particulars suited for database work. The retrieval package was designed and implemented solely by managing director Robert Gaby and his staff, using BASIC.

According to Gaby, 25,000 companies are already supplying data to FIND, which has been running on a trial basis since September. These firms include ICI, GEC, and Kienzle; many are already getting a free trial.

New idea in DP insurance

NOVEL insurance cover against the devastating effects of fire, flood and explosion on a company's data processing centre has been made available through a new company, Recovery Operations Centre.

ROC will erect a temporary computer centre at any company hit by disaster for premiums ranging from £2,000 a year.

selected in any open space. Within five days and they come equipped with electrical, fire protection systems, environmental control equipment, and security access control. In addition, ROC can also provide temporary power and telecommunications lines.

Even sizes of building appropriate, a 1,570 square foot unit (£1,950 p.a.) and a 2,640 sq ft unit (£2,950 p.a.)

OLIVETTI BUSINESS LAUNCH



ADDING to its Business Computer Systems range, Olivetti has introduced the BCS 2000 Video series, the first two members being the BCS 2030 VF and the 2028, which is shown here. Both models come with a full sized VDU and two megabytes of storage capacity on double density floppy disc drives.

The 2028 is equipped with a 13-inch carriage and a 60 cps printer while the 2030 VF comes with an 18-inch carriage and a bi-directional printer that runs at 100 cps.

The BCS 2000 will complement rather than replace the existing BCS 2000 family and will run Olivetti's Opal range of applications packages.

French PO and travel agents to devise joint DP system

FRANCE'S national syndicate of travel agents, SNAV, has joined forces with the French Post Office's telecommunications department and its subsidiary Servitel to devise a data processing system for its members.

Foreign countries will be asked to co-operate in defining a system compatible with those being introduced abroad.

Jean-Marie Straucuzzi, the SNAV official responsible for the project, says it will increase tour operators' sales of holiday packages, speed and boost bookings, reduce administrative work and provide detailed statistics required for sales strategy.

SNAV had earlier shown in-

terest in a system devised by Servitel and known as STT, or tourism data processing service. But the travel agents' computer working group ruled against STT, on the grounds that it was already obsolete.

The French travel agents hope a new system will be operative within two years. Meanwhile they are asking Air France and French railways for more terminals in order to handle travel bookings.

SNAV has also asked Industry Minister Andre Giraud to set up a databank of travel information which will give members immediate access to material now available only by lengthy consultation of brochures and timetables.

Cable TV gives US a boost in Prestel race

TWO experiments in online information services for consumers at home, based in Columbus, Ohio, look like giving the US another boost in its race to catch up with Britain's Prestel.

The users in Columbus have given enthusiastic reactions to one online service that uses their cable television system rather than the telephone, and to another that has provided access to a wide range of home information including an entire encyclopedia.

The use of spare channels on a television cable for information services is attractive because of the higher speed and better graphics involved, and the elimination of telephone charges.

Richard Baker of Compuserve, the bureau that is providing the computing service, explained in

Computer Weekly: "We are of the strong opinion that cable will play a major role in the delivery of information to the home."

Joining Compuserve in the experiment, which has just started operation with 10 users, are Qube, the cable TV service that already provides audience response keys for its viewers (CW, August 10, 1978) and Atari, which is supplying the terminals. The users have access to Compuserve's hobbyists' information service, providing news, stock market and sports reports, recipes, electronic mail, and a shop-at-home service (CW, July 24, 1980).

The one part of the Compuserve database not available via Qube is the Columbus Dispatch newspaper-on-line. Negotiations are still going on as to how Qube's

and the Dispatch's competing interests in advertising and shop-at-home can be reconciled.

The other experiment in Columbus, which has just finished, is a viewdata service provided by OCLC, the Ohio College Library online system. In what was originally called the Channel 2000 experiment, 200 homes were provided with specially-designed decoders which they could access information on entertainment and coming events, financial advice from a bank, a public library catalogue, and the full text of 30,000 articles from the academic American Encyclopedia.

"We were surprised by the good response from the users," Tom Harnish of OCLC told Computer Weekly. As a result the firm is

looking for ways of setting up a full-scale money-making service, under the name of Viewtel.

Testing has been going on for a way to add audio information to the viewdata signal. Harnish explains that this could enable them to play a Bach fugue to the user when he looks up an article on the computer, or for information-seeking a human operator could give help by voice.

The decoders were designed from scratch because no existing technology seemed suitable. The UK supplier Inscac was consulted but showed no interest in home applications, Harnish said. Inscac has always said it wanted to concentrate on business use of viewdata. Each decoder has 10K of memory.

Chinese mini on show

A RARE insight into Chinese computer technology was provided by the National Exhibition of the People's Republic of China, which toured a number of cities in the US between September and December of last year. On display were several of the most popular Chinese-built computers, peripheral devices and magnetic tape and paper tape drives.

One of the major exhibits was the DJS-131 mini, which is already an eight-year-old design but is still in production because the Chinese maintain 10-year hardware manufacturing cycles. Nevertheless the DJS-131 series is being phased out and is expected to be replaced by some of the DJS-200 series of computers that are comparable to the IBM 360 machines.

The Shanghai Electronic Computer Factory which produces the DJS-131 also manufactures the more advanced DJS-220 computer and the TQ-16 and the TQ-6, a large machine rated at 1,000,000 operations per second.

Under the new joint-venture laws being promulgated in China, the Shanghai factory is drawing

introduction of higher levels of integration and improvements of manufacturing technology the prices of their computers will continue to decline.

According to the Chinese technicians, who accompanied the exhibit, the DJS-131 mini is already an eight-year-old design but is still in production because the Chinese maintain 10-year hardware manufacturing cycles.

Nevertheless the DJS-131 series is being phased out and is expected to be replaced by some of the DJS-200 series of computers that are comparable to the IBM 360 machines.

The central processor of the DJS-131 is a 16-bit word machine with a magnetic core memory and a two-microsecond cycle time. The memory is expandable to a maximum of 32K words in 4K modules.

plans to enter into licensing and compensation trade agreements with Western manufacturers. The management is eager to obtain Western technology to produce more advanced hardware for use in China as well as for export to foreign countries, and Western manufacturers who are interested in such co-operation should contact Chou Pinxian, the director of the plant.

The DJS-131 computer uses TTL integrated circuits in the small scale integration (SSI) category with less than 100 gates per chip. As a result considerable interest centres on development of MSI and particularly LSI components for use with future Chinese computers assembled at this location.

The Shanghai Electronic Computer Factory which produces the DJS-131 also manufactures the more advanced DJS-220 computer and the TQ-16 and the TQ-6, a large machine rated at 1,000,000 operations per second.

Under the new joint-venture laws being promulgated in China, the Shanghai factory is drawing

Banks plan online credit card by 1982

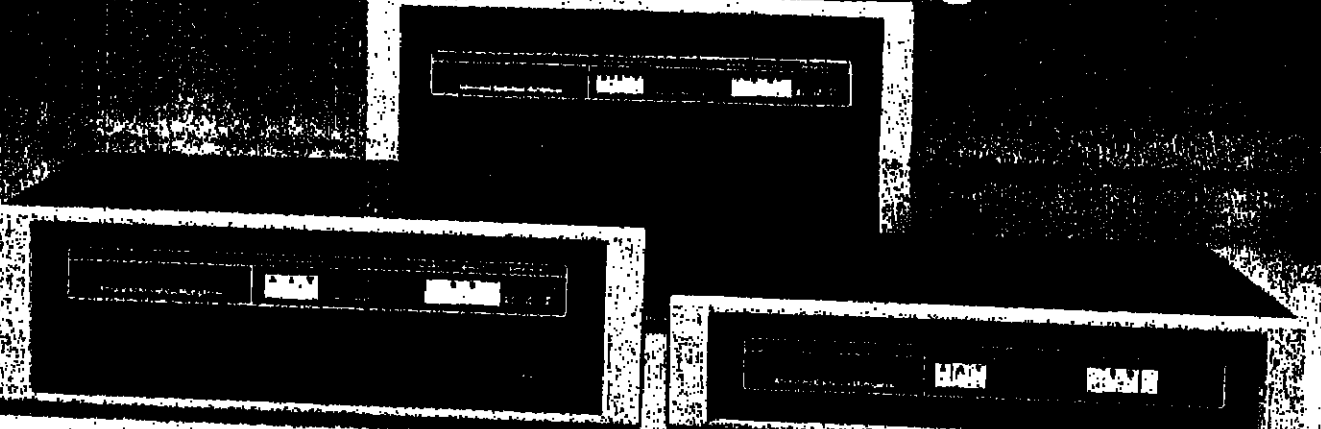
LOCAL BANKS at Saint-Etienne, Central France, are planning a 1982 launch for an online credit card which can be used at 200 point-of-sale terminals.

A limited experiment of online payment has been operating for the past two years at Bourg-en-Bresse, a prosperous farming centre between Lyon and Geneva. The originator, the Banque Regionale de L'Alain, say 60 per cent of its cheque holders now carry online cards.

Although it costs £2,000 to install each point-of-sale terminal, the system represents an enormous saving in processing cheques, each of which costs the bank 50 pence.

France's next problem looks like being how to make online and offline cards compatible with two different payment networks.

The new multiplexers you've been waiting for.



OMNIMUX—from Racal-Milgo.

Racal-Milgo has designed, developed and built a completely new advanced range of statistical multiplexers.

We've named it OMNIMUX—because it does all you could want from a statistical multiplexer. And it comes in three versions: for up to 8, 16 or 32-channel operation. OMNIMUX incorporates a host of advanced features, including:

- Simultaneous operation of all input channels at up to 9600 bit/s—giving maximum input data rate of 307.2 kbit/s
- Statistically mixed asynchronous and synchronous channels
- Error protection (ARQ) to CCITT-X-25 level 2 protocol
- Supervisory port for monitoring, high level network control, diagnostic and statistics reporting

- Commonality of PCBs between models giving lower-cost maintenance and cost-effective system expansion.
- Integrated network management capability—permitting use with Racal-Milgo's family of Network Diagnostic Controllers.
- Echoplex, providing complete end-to-end error control.
- Comprehensive diagnostics, with all controls and displays on the front panel.

And every OMNIMUX is backed by Racal-Milgo's unrivalled reputation and its comprehensive customer support package, including systems design, commissioning, installation and after-sales service.

Racal-Milgo: The only company to design and manufacture equipment and systems to meet all your data communications requirements. In short, the complete data communications company.

OMNIMUX Statistical multiplexing. Racal-Milgo

To: Racal-Milgo Limited, Portman House, 12 Portman Road, Reading, Berks, England.	Name _____
Please send me full details of the OMNIMUX range.	Title _____
	Company _____
	Address _____
	Telephone _____

RACAL

UK enquiries: Racal-Milgo Limited, Portman House, 12 Portman Road, Reading, Berks, England. Tel: (0734) 584811

Overseas enquiries: Racal-Milgo Limited, Richmond House, 409 High Road, Basingstoke, Hampshire, England. Tel: (02514) 22114

...when you need a dependable supplier, an authorised distributor with a comprehensive range of products at keen prices, backed by large stocks for fast delivery, with full after-sales support. We promise you a rapid response.

ANADIX DP8000
Specialist value through quality. 84 lines per minute, 112 cps. Parallel and serial interfaces as standard. 85 ASCII set. 8x7 font. Variable baud rate. Form 12 interface. 16 buffer slots. Options include 24 entry store, IEEE interface.
from only **£494**

DIGITAL LA34
30 cps dot matrix terminal. Roll feed, paper width from 3.14 inches. 24 lines per minute. 85 ASCII set. 8x7 font. Variable baud rate. Form 12 interface. 16 buffer slots. Options include 24 entry store, IEEE interface, vector graphics, 16 buffer slots. APL character set and foreign keys.
from only **£1556**

DIGITAL LA120
120 cps keyboard terminal. Optimised for dot matrix printing. Selectable character widths. 85 ASCII set. 8x7 font. Variable baud rate. Form 12 interface. 16 buffer slots. Options include 24 entry store, IEEE interface, vector graphics, 16 buffer slots. APL character set and foreign keys.
from only **£450**

LEARN SIEGLER ADM-3A
The most popular visual display in the world. 1800 character screen capacity. Customised keyboard. Dual interface. Auxiliary port. Wide range of speed and word formats. Options include Teletype 6010, Teletype 6011, Teletype 6012, Teletype 6013, Teletype 6014, Teletype 6015, Teletype 6016, Teletype 6017, Teletype 6018, Teletype 6019, Teletype 6020, Teletype 6021, Teletype 6022, Teletype 6023, Teletype 6024, Teletype 6025, Teletype 6026, Teletype 6027, Teletype 6028, Teletype 6029, Teletype 6030, Teletype 6031, Teletype 6032, Teletype 6033, Teletype 6034, Teletype 6035, Teletype 6036, Teletype 6037, Teletype 6038, Teletype 6039, Teletype 6040, Teletype 6041, Teletype 6042, Teletype 6043, Teletype 6044, Teletype 6045, Teletype 6046, Teletype 6047, Teletype 6048, Teletype 6049, Teletype 6050, Teletype 6051, Teletype 6052, Teletype 6053, Teletype 6054, Teletype 6055, Teletype 6056, Teletype 6057, Teletype 6058, Teletype 6059, Teletype 6060, Teletype 6061, Teletype 6062, Teletype 6063, Teletype 6064, Teletype 6065, Teletype 6066, Teletype 6067, Teletype 6068, Teletype 6069, Teletype 6070, Teletype 6071, Teletype 6072, Teletype 6073, Teletype 6074, Teletype 6075, Teletype 6076, Teletype 6077, Teletype 6078, Teletype 6079, Teletype 6080, Teletype 6081, Teletype 6082, Teletype 6083, Teletype 6084, Teletype 6085, Teletype 6086, Teletype 6087, Teletype 6088, Teletype 6089, Teletype 6090, Teletype 6091, Teletype 6092, Teletype 6093, Teletype 6094, Teletype 6095, Teletype 6096, Teletype 6097, Teletype 6098, Teletype 6099, Teletype 6100, Teletype 6101, Teletype 6102, Teletype 6103, Teletype 6104, Teletype 6105, Teletype 6106, Teletype 6107, Teletype 6108, Teletype 6109, Teletype 6110, Teletype 6111, Teletype 6112, Teletype 6113, Teletype 6114, Teletype 6115, Teletype 6116, Teletype 6117, Teletype 6118, Teletype 6119, Teletype 6120, Teletype 6121, Teletype 6122, Teletype 6123, Teletype 6124, Teletype 6125, Teletype 6126, Teletype 6127, Teletype 6128, Teletype 6129, Teletype 6130, Teletype 6131, Teletype 6132, Teletype 6133, Teletype 6134, Teletype 6135, Teletype 6136, Teletype 6137, Teletype 6138, Teletype 6139, Teletype 6140, Teletype 6141, Teletype 6142, Teletype 6143, Teletype 6144, Teletype 6145, Teletype 6146, Teletype 6147, Teletype 6148, Teletype 6149, Teletype 6150, Teletype 6151, Teletype 6152, Teletype 6153, Teletype 6154, Teletype 6155, Teletype 6156, Teletype 6157, Teletype 6158, Teletype 6159, Teletype 6160, Teletype 6161, Teletype 6162, Teletype 6163, Teletype 6164, Teletype 6165, Teletype 6166, Teletype 6167, Teletype 6168, Teletype 6169, Teletype 6170, Teletype 6171, Teletype 6172, Teletype 6173, Teletype 6174, Teletype 6175, Teletype 6176, Teletype 6177, Teletype 6178, Teletype 6179, Teletype 6180, Teletype 6181, Teletype 6182, Teletype 6183, Teletype 6184, Teletype 6185, Teletype 6186, Teletype 6187, Teletype 6188, Teletype 6189, Teletype 6190, Teletype 6191, Teletype 6192, Teletype 6193, Teletype 6194, Teletype 6195, Teletype 6196, Teletype 6197, Teletype 6198, Teletype 6199, Teletype 6200, Teletype 6201, Teletype 6202, Teletype 6203, Teletype 6204, Teletype 6205, Teletype 6206, Teletype 6207, Teletype 6208, Teletype 6209, Teletype 6210, Teletype 6211, Teletype 6212, Teletype 6213, Teletype 6214, Teletype 6215, Teletype 6216, Teletype 6217, Teletype 6218, Teletype 6219, Teletype 6220, Teletype 6221, Teletype 6222, Teletype 6223, Teletype 6224, Teletype 6225, Teletype 6226, Teletype 6227, Teletype 6228, Teletype 6229, Teletype 6230, Teletype 6231, Teletype 6232, Teletype 6233, Teletype 6234, Teletype 6235, Teletype 6236, Teletype 6237, Teletype 6238, Teletype 6239, Teletype 6240, Teletype 6241, Teletype 6242, Teletype 6243, Teletype 6244, Teletype 6245, Teletype 6246, Teletype 6247, Teletype 6248, Teletype 6249, Teletype 6250, Teletype 6251, Teletype 6252, Teletype 6253, Teletype 6254, Teletype 6255, Teletype 6256, Teletype 6257, Teletype 6258, Teletype 6259, Teletype 6260, Teletype 6261, Teletype 6262, Teletype 6263, Teletype 6264, Teletype 6265, Teletype 6266, Teletype 6267, Teletype 6268, Teletype 6269, Teletype 6270, Teletype 6271, Teletype 6272, Teletype 6273, Teletype 6274, Teletype 6275, Teletype 6276, Teletype 6277, Teletype 6278, Teletype 6279, Teletype 6280, Teletype 6281, Teletype 6282, Teletype 6283, Teletype 6284, Teletype 6285, Teletype 6286, Teletype 6287, Teletype 6288, Teletype 6289, Teletype 6290, Teletype 6291, Teletype 6292, Teletype 6293, Teletype 6294, Teletype 6295, Teletype 6296, Teletype 6297, Teletype 6298, Teletype 6299, Teletype 6300, Teletype 6301, Teletype 6302, Teletype 6303, Teletype 6304, Teletype 6305, Teletype 6306, Teletype 6307, Teletype 6308, Teletype 6309, Teletype 6310, Teletype 6311, Teletype 6312, Teletype 6313, Teletype 6314, Teletype 6315, Teletype 6316, Teletype 6317, Teletype 6318, Teletype 6319, Teletype 6320, Teletype 6321, Teletype 6322, Teletype 6323, Teletype 6324, Teletype 6325, Teletype 6326, Teletype 6327, Teletype 6328, Teletype 6329, Teletype 6330, Teletype 6331, Teletype 6332, Teletype 6333, Teletype 6334, Teletype 6335, Teletype 6336, Teletype 6337, Teletype 6338, Teletype 6339, Teletype 6340, Teletype 6341, Teletype 6342, Teletype 6343, Teletype 6344, Teletype 6345, Teletype 6346, Teletype 6347, Teletype 6348, Teletype 6349, Teletype 6350, Teletype 6351, Teletype 6352, Teletype 6353, Teletype 6354, Teletype 6355, Teletype 6356, Teletype 6357, Teletype 6358, Teletype 6359, Teletype 6360, Teletype 6361, Teletype 6362, Teletype 6363, Teletype 6364, Teletype 6365, Teletype 6366, Teletype 6367, Teletype 6368, Teletype 6369, Teletype 6370, Teletype 6371, Teletype 6372, Teletype 6373, Teletype 6374, Teletype 6375, Teletype 6376, Teletype 6377, Teletype 6378, Teletype 6379, Teletype 6380, Teletype 6381, Teletype 6382, Teletype 6383, Teletype 6384, Teletype 6385, Teletype 6386, Teletype 6387, Teletype 6388, Teletype 6389, Teletype 6390, Teletype 6391, Teletype 6392, Teletype 6393, Teletype 6394, Teletype 6395, Teletype 6396, Teletype 6397, Teletype 6398, Teletype 6399, Teletype 6400, Teletype 6401, Teletype 6402, Teletype 6403, Teletype 6404, Teletype 6405, Teletype 6406, Teletype 6407, Teletype 6408, Teletype 6409, Teletype 6410, Teletype 6411, Teletype 6412, Teletype 6413, Teletype 6414, Teletype 6415, Teletype 6416, Teletype 6417, Teletype 6418, Teletype 6419, Teletype 6420, Teletype 6421, Teletype 6422, Teletype 6423, Teletype 6424, Teletype 6425, Teletype 6426, Teletype 6427, Teletype 6428, Teletype 6429, Teletype 6430, Teletype 6431, Teletype 6432, Teletype 6433, Teletype 6434, Teletype 6435, Teletype 6436, Teletype 6437, Teletype 6438, Teletype 6439, Teletype 6440, Teletype 6441, Teletype 6442, Teletype 6443, Teletype 6444, Teletype 6445, Teletype 6446, Teletype 6447, Teletype 6448, Teletype 6449, Teletype 6450, Teletype 6451, Teletype 6452, Teletype 6453, Teletype 6454, Teletype 6455, Teletype 6456, Teletype 6457, Teletype 6458, Teletype 6459, Teletype 6460, Teletype 6461, Teletype 6462, Teletype 6463, Teletype 6464, Teletype 6465, Teletype 6466, Teletype 6467, Teletype 6468, Teletype 6469, Teletype 6470, Teletype 6471, Teletype 6472, Teletype 6473, Teletype 6474, Teletype 6475, Teletype 6476, Teletype 6477, Teletype 6478, Teletype 6479, Teletype 6480, Teletype 6481, Teletype 6482, Teletype 6483, Teletype 6484, Teletype 6485, Teletype 6486, Teletype 6487, Teletype 6488, Teletype 6489, Teletype 6490, Teletype 6491, Teletype 6492, Teletype 6493, Teletype 6494, Teletype 6495, Teletype 6496, Teletype 6497, Teletype 6498, Teletype 6499, Teletype 6500, Teletype 6501, Teletype 6502, Teletype 6503, Teletype 6504, Teletype 6505, Teletype 6506, Teletype 6507, Teletype 6508, Teletype 6509, Teletype 6510, Teletype 6511, Teletype 6512, Teletype 6513, Teletype 6514, Teletype 6515, Teletype 6516, Teletype 6517, Teletype 6518, Teletype 6519, Teletype 6520, Teletype 6521, Teletype 6522, Teletype

PROGRAMMERS' PAGE

A model that parallels human thought process

IN this, the last episode of Solution to a Problem, the lid is taken off Production Systems, a language model by Newell and Simon to simulate human thinking processes.

First think of a number. Not any number, but the specific one for each letter to solve this cryptogram.

DONALD
GERALD
ROBERT

(given D = 5)
From little puzzles grow great research studies. While you pondered, did you mutter a little/ah! all the time? Volunteers especially trained to think aloud showed N & S that reasoning goes through clear and precise states of knowledge connected by operators. To graduate from one state to another, operators such as addition, search, value assignment and substitution are evoked.

All this N & S summed in a graph, the Problem Behaviour Graph, where knowledge states are nodes and operators arrows (see Figure 1).

The crux of the matter lies in how the operator is activated. Newell and Simon wanted to devise a model so precise that it could specify a computer program. They wanted a language, and needed one that could define the particular circumstances to make an operator go live.

Ideas for just this had been kicking around the computer science department for some time, but N & S pioneered its development as Production Systems.

Essentially, PS consists of a set of production rules, each with a condition connected to an operator (see Figure 2).

Either the condition or the action may be multiple, but if the condition(s) are true, the operator

is activated. The corollary is that no condition means no action, though the computer keeps on checking until one is satisfied.

The list of rules is stored as a table, in the database and the system recognises if the condition is true by pattern matching against data in working memory. Suppose it tried to assess the product rule shown in Figure 3.

A letter is assigned to parameter 1 and a number to n, so that for example, the condition becomes D = 5, and this is checked against working memory. Finding it present (D = 5 was given initially) the system takes the actions on the right-hand side. It searches for (1), now D, and stores the result, the column number c, in working memory. The sum of this column (c = 6) is then calculated and again stored.

This result can now be used in the next Production Rule, as

shown in Figure 4. The possible value or values assigned to a letter are tentative, hence the question mark.

In working memory now is D + D = 10, so the operator VALUE is triggered to assign T = 0.

Many other operators are possible, but it is important to keep the set as small as is feasible — one for every occasion would defeat the object of defining a set of rules. Newell and Simon devised 14 production rules which generated 237 different knowledge states, including provision for carry-overs to the next column.

It may happen that two rules are equally valid, and conflict. Priority has to be decided and built into the language.

There are several ways of choosing. Priority can be given to the rule satisfying the most recent data additions, or to the most complicated rule (on the premise that it

arises more rarely). Alternatively, any rule just activated can be ignored.

Another issue is removal of data from working memory. Constant addition means eventual saturation, and deletion can be on the basis of either oldest, or problem-specific data.

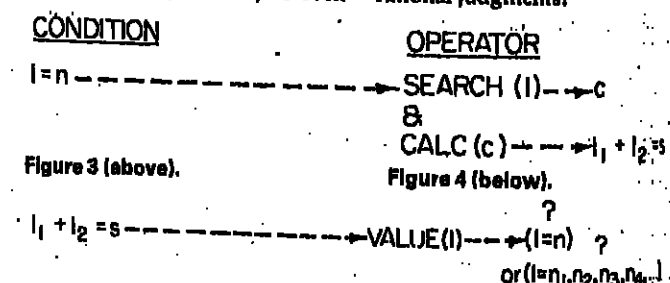
Production Systems differ from other similar systems because no pre-determined sequence is necessary. Any and every time the conditions are met, the operator is activated. Neither do actions have to be specific sub-goals as in means-end analysis — they can happen whenever circumstances are right.

New rules can easily be added when a plausible set of conditions is discovered, and since each rule is independent of the others, alteration does not upset the existing ones.

However, more rules may mean more conflict. The system can also teach itself. Results can be added to the database where production rules are stored, as well as to working memory. The language thus learns as it goes along.

The prickly question of directly comparing the human brain to the computer now crops up. At the risk of offending centres of artificial intelligence, let us grasp the nettle firmly and say that it is not feasible.

The problem is that capabilities are so different. The computer has a prodigious memory and lightning calculation speed, but lacks the vast background of knowledge and experience (database) of even



Ledger system written by accountants

TUCKED up cozily in one of the Dorchester's comfortable chairs, with a coffee in one hand and a gin in the other, I listened to a description of the advantages of File Management System.

Produced by Armitage Norton Consultants — an offshoot of the chartered accountants Armitage & Norton, and engineers The Ewbank Consulting Group — FMS is an integrated ledger system written for accountants, by accountants, and sticking very much to recognised accounting conventions.

"This makes it very easy for accountants, bookkeepers and clerks to understand and use the system," said Jim Shoemith, senior computer consultant of ANCO. "All the terminology is familiar, and the output reports don't have to be decompartmented for management and office staff."

"Data is input via four main 'books': prime entry; the purchase book; the sales book; and the financial journal. All data is automatically recorded in the three ledger books: the nominal, the purchase and the sales ledger, and virtual."

Paul Furnell, the system designer, described the search for the right hardware. "Though FMS will run on computers from micro to mainframe, we looked fairly hard at the market to find the best machines for us."

Typical prices were quoted as from £2,250 for the CPU, £500 for the printer, from £350 for the terminal, and from £1,400 for the FMS package.

by Pamela Rowe

Figure 1 (above): Knowledge states and operators linked on a Problem Behaviour Graph specific to one individual.

Figure 2 (left): Production Systems consist of a list of actions & dependent on linked conditions.

the most restricted human brain. The human mind is capable of judging fine distinctions as to outside the range of the more sophisticated machine. It seems the two are more complementary than competitive.

With these provisos, human thinking processes can be mimicked by process operators made explicit by computer programs, like PS. Its memories, the production rules and working memory have been linked to human long-term and short-term memory respectively. The activation rules are likened to the basic processes of underlying cognition, and conflict resolution to strategies for stimulus or blanketing of perception.

Several human studies have used PS as a basis. Simon in 1972 compared solutions to the 15-puzzle problem (Programme Page, December 25, 1980) to their load on working memory. Overloads have to be ruled out possible human strategies.

A year later Young investigated children's approaches to problem solving and modelled different stages of mental development in addition or deletion of new production rules.

Could it be that all human experience can be viewed as the utilisation of production rules linking sets of circumstances to specific actions? A case of grey data while we may. And if computer was supplied with enough rules, could it not make rational judgments?

OP SPOT

Management skills are badly needed on shift

SOME operators feel they are tucked away in an armchair of the universe, others feel that the future belongs to them. Chris Schaefer argues the optimistic case.

A relentless talker, he believes that the operations department should be a "dynamic area" and that it is not the "ideal place for the molder".

Schaefer calls himself an independent consultant, which in his case is not a euphemism for a tax dodge. After 14 years in DP (eight in operations) he now wears two hats to earn his living.

In his consultancy, his hat he specialises in IBM work, although he has worked with most other brands of mainframe. He spends the remainder of his time lecturing for Infotech Operations.

He is currently lecturing on disaster recovery contingency planning, and audit and productivity. He supports what amounts to the Infotech orthodoxy of seeing operations as a factory and of seeing ops managers as potential managing directors.

Says Schaefer: "The comparison with a factory cannot be ignored, and is used to encourage shop-floor techniques such as quality control, reliability, product orientation and maximum throughput at minimum cost." He could be talking about line workers at Longbridge or Dagenham.

He is fond of talking of the "company's information base" and of the "whole work flow" and refers to the computer as "the business asset" and the computer department as the "production unit".

Accessible

Such terminology has the virtue of making the mysteries of computing more accessible to those uninitiated into its ways. Just as the ops needs to know "company objectives and policy" (which Schaefer advocates) so the management should appreciate what the employees, tending the computer, are up to.

If management needs the help of a comparison of a computer room with a factory, no one is any the less wise. To perceive information as a commodity is, in any case, basically correct.

One of Schaefer's missions in life is to boost the importance of the operator, the worker responsible for producing the commodity. In taking an optimistic view of the operator's value he wants to do away with certain misconceptions. He reckons that the operations

department's low reputation and status can be attributed to what others believe about it rather than how that department actually performs. For instance, the user department believes operations "to be a tribe of button pushers" who "can cope with any variance in volume or schedules with a minimum of advance warning".

Next comes data processing which, according to Schaefer, "views operations as a number of small units which should be addressed directly rather than through the management structure". This is compounded by a belief that training of ops is a waste of time and money and that "any level of technical skill or support can be provided from the development area".

The most damaging assumptions are the ones that operations makes about itself. Schaefer says: "Operations believes strongly in providing the service its users require whatever the cost. It believes in making do with what it has and accepts lack of time and senior personnel as a way of life".

Production

He talks of the old sort of operating team which "views the supreme achievement of its skills as keeping the wait light off and the system light on". If the ops are involved with teleprocessing there will have to be a greater involvement and, getting back to the factory analogy, there must be a belief in production.

The crux of Schaefer's argument is that there should be "management skills on shift".

Management skills implies management status and management pay to match. It also implies that user department misconceptions are revised. Schaefer recommends two things: career opportunity within ops, and training.

He says: "For the dynamic machine operator there must be a long-term career." Expanding on the theme he continues: "The old theory of operations being only a stepping-stone to the traditional path through to programming and then systems is dead and should once and for all be put to rest."

"The good operator may make a passable programmer and perhaps a reasonable systems analyst, but there are no directly related skills which, when developed, would guarantee a high contribution in all three areas."

Schaefer identifies three types of training: induction, on-the-job and technical. The first should "commit the employee and provide mo-

Op's training outfit

LOOK out for a new name in operator training over the coming months. Protocol Operations is a six-man outfit which is mounting its first course on DOS at the end of February.

One member of the team is Phil Cartmell. Having parted company with Infotech Operations less than two months ago owing to policy disagreements, he is bouncing straight back into the operator training arena.

Cartmell doesn't want Protocol characterised as an Infotech splinter group and says: "We will concentrate exclusively on operations."

Protocol has lecturers on DOS, OS, TP and management. It will cover a total of 16 subjects split into technical and man-

agement divisions. Technical courses will last three days and be held in hotels within Greater London at a price between £200 and £250. Maximum attendance will be 16. The division will be between the theoretical and the practical. Protocol is also anxious to promote in-house courses.

A micro-based simulator for operator training is being prepared.

Management courses are fully characterised as well cost up to £500, a price tag which includes a stay in a South Coast hotel.

For anyone interested in freebies, you can scrounge a wall-chart advertising Protocol's wares if you phone: (0734) 760640.

by Paul Fisher

Screening VDU victims

ALONG with the motorway box around Land's End, one of the burning non-issues of our time centres on whether VDUs are dangerous.

Common sense tells me that working in front of a screen is about as risky as peeling onions. For a more professional assessment, any actuary will tell you (for a fee) that the trades of the stoepjack or the bull-fighter are far more dangerous.

In front of me I have a pile of clippings and two documents, one from the Association of Technical and Managerial Staffs (ASTMS) and the other from the Health and Safety Executive (HSE). Between them they have a bibliography of 138 references, which goes to show that someone

The ASTMS document, A Guide to Health Hazards of Visual Display Units, is packed with recommendations. These range from the technical ("a minimum screen luminance of 75cd/m² is needed but normally around 150cd/m² is appropriate") to advice about switching the thing off when it's not in use. There is also something from ASTMS for the lover of the loony statistic. Did you know that "It has been proven that over 90% of eye defects are purely optical"?

The HSE's recent publication, entitled Human Factors Aspects of Visual Display Unit Operation, tops this with the observation that "estimates of the prevalence of photosensitive epilepsy in the general population

range from 1 in 5,000 to 1 in 10,000".

That gives the potential epileptic a dog's chance of a VDU fit or no chance at all. The report indicates that VDUs do not pose a health threat to most operators. At one point it states that many VDU problems "stem directly from task inherent demands".

If boredom can be counted as a health risk it's another one to add to the list of dangers which should also include epilepsy, migraine, curved spine, radiation, cataracts and, believe it or not, rashes. Apparently a couple of Norwegians developed face rashes after sitting in front of a screen all day.

Should anyone have been wounded, or even irritated, by a VDU please write in and tell me.

Green fingers bound with magnetic tape

A SURVEY dating back a couple of years discovered that a high proportion of systems analysts were interested in landscape gardening. This may have been due to the fact that they are among the few who can afford a garden to landscape.

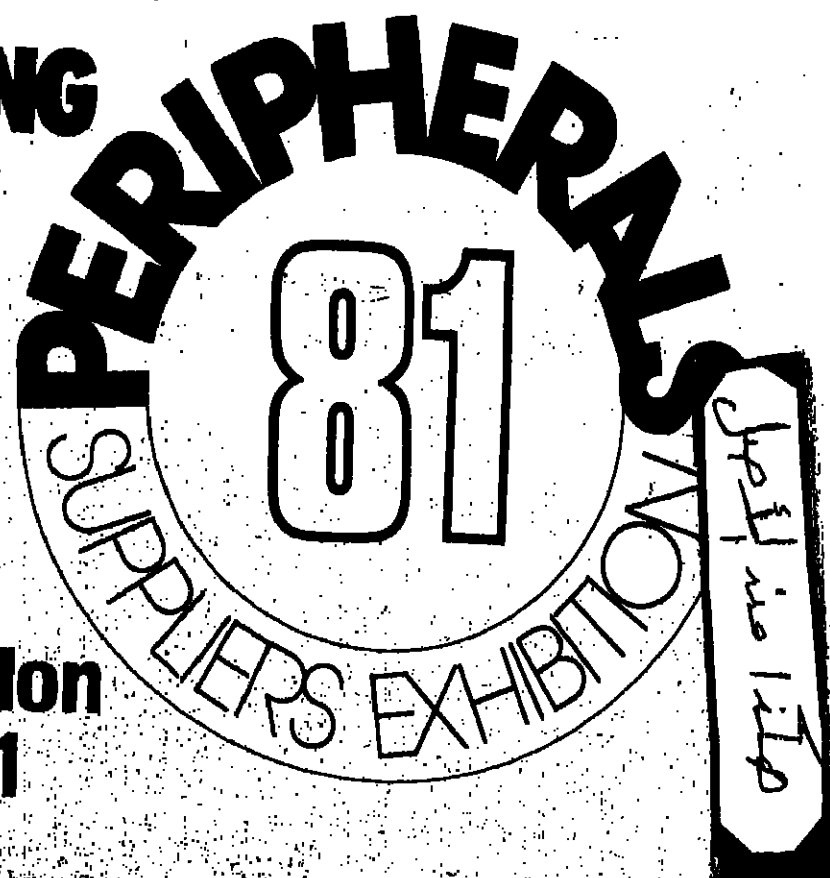
No matter, because I have a handy tip for the

humbler computer gardening enthusiast. Magnetic tape is ideal for tying up chrysanthemums and geraniums, being strong, waterproof — and free, if you know where to get it.

Also, these plucky plants can be grown in a bucket so there is no need to save up for a country estate.

MORE OF EVERYTHING AT...

The West Centre Hotel, Lillie Road, Fulham, London April 1-3, 1981



SO SUCCESSFUL — The 1980 Peripherals Suppliers' Exhibition, that the organisers have had to make it bigger in every way for 1981.

MORE TIME — An extra day, three instead of two. Attendance in 1980 was triple that of the previous year and in the opinion of the exhibitors the RIGHT people attended.

MORE SPACE — Half as large again to accommodate all the companies that want to exhibit — already over 60 per cent of the 1980 exhibitors have re-booked.

AGAIN — Peripherals will bring together suppliers and buyers of technically sophisticated computer equipment in the relaxed atmosphere of a first-class hotel exhibition suite.

AGAIN — Peripherals is presented by the Peripherals Suppliers' Association and sponsored by "Systems International" the prominent monthly computer journal of IPC Business Press, the world's largest complex of specialist and business journals.

IF YOU WOULD LIKE MORE DETAILS — FILL IN AND RETURN THE FORM BELOW

To: The Advertisement Manager, Systems International, Quadrant House, The Quadrant, Sutton, Surrey SM2 8AS. Please send me further details of Peripherals 81.

Name: _____
Company: _____
Address: _____

TBING

Puzzler

TO mark the coming of a new year, I have put together the following skeletal fraction sum:

The right-hand side of the equation contains all nine digits from 1 to 9, and the "left" and "one" figures are immediately adjacent. Your task is to put in the digits in their right places to make up a valid one ninth, so the first job is to find the 1/9.



Only one company puts this much in a £475 teleprinter.

It's not for nothing that the 30cps teleprinter is the most popular choice for continuous listing. It's easy to change cartridge ribbon. It's got 256 weight. It's got a numeric keypad, tractor feed, terminal, paper roll holder, paper tray, paper out, paper in, paper low switch, 20mA interface, extended legs option, optional spacing, and optional paper roll holder.

400000

WE CHANGE THE WAY THE WORLD THINKS.

400000

400000

400000

400000

400000

400000

PEOPLE and EVENTS

Prime appoints its first European VPs

PRIME Computer has for the first time appointed officers of the company to run major parts of its European operations. This reflects the company's recent success in Europe. Prime Europe now accounts for 40% of the company's annual turnover.

Peter Gyenes, formerly director of Prime's European marketing operations and David Cheesman, previously director of research, development and engineering are now vice-presidents.

Gyenes joined Prime three years ago. He previously worked for IBM, IBM

World Trade and Xerox Corp. He holds an MBA in marketing from Columbia University.

Cheesman gained experience in the industry when he worked as director of small systems (international) support at Sperry Univac, and has been with Prime for two and a half years. He holds a BSc in electrical engineering, is a chartered engineer and a member of the Institute of Electrical Engineers.

Prime has 25 sales offices throughout 12 European countries and employs 250 sales and support staff with over 100 field engineers.

Technology consultant

A principal consultant for the Technology Management Centre has been appointed by Logica. Derek Barber took over the post at the beginning of the year, bringing with him several years' experience in communications and computing.

Barber joined NPL in 1954, to work on the early digital and analogue computers. He became involved in the interface between a computer and its environment and devised a standard interface which was a key tool used in the application of computers to process control.

In 1965 he became head of a group developing a research network based

on packet switching. With Donald Davies he wrote Communications Networks for Computers. He was made head of information systems at NPL in 1969. At the end of 1970 he became chairman of the ELIC committee that planned Gost Project 11, and in 1973 became director of the project.

Barber's experiences and involvement with the International Network Group (INWG), led to the publication of his second book, Computer Networks and their Protocols.

With Logica, Barber will be concerned with the management and organisational implications of the new technology.



Duggan

Research post at Urwick Nexos

Diana Duggan has been appointed to manage major research projects to be undertaken by the systems research division at Urwick Nexos. She joins the company from Logica, where she undertook technical direction of the Computing Services Association's consultancy study on the implications of text processing.

Christopher Walker is now head of data processing with Tyne and Wear County Council. His working life has been spent with local government, with the computer sections of the treasurer's departments of North Riding County Council and the Newcastle City Council, and since 1973 as chief systems analyst with Tyne and Wear.

Rufus Greenbaum has been appointed sales manager for the UK and Scandinavia at General Instrument. He



Barrett

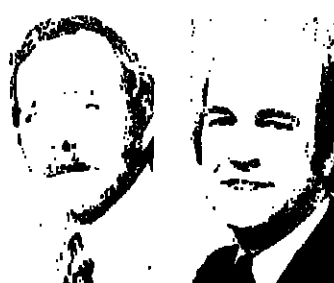
joins from Intel, where he held overseas sales appointments for the last three years. Before that he was with Motorola and SGS and has about 18 years' experience in the European semiconductor industry.

Bob Barrett has joined Sintrom Electronics as product manager. He has worked for several major electronics companies in a marketing capacity. He has a degree in computing and is an associate member of the Institute of Marketing.

Richard Hall has been appointed general manager of Centronics Data Computer (UK). He has been with the company nearly five years.

Brian Mills, until recently chief executive of BOC Computer Services, has been appointed a non-executive director of Abtec Computer Systems.

Kelth Nichols has been appointed product marketing manager for CAD/CAM systems at Ferranti Cetec Graph-



Oke

John Oke has joined Harris as a senior sales executive for the company's information systems international division in Slough. He previously worked for Honeywell at Zeus-Hermes.

Barry Payne has been appointed sales manager for Gees Microsystems. He was previously district sales manager at Control Data, and in 1979 was that company's manager of the year.

Sara Morrison and Paul Amb Weiller have been appointed directors of GEC. William Rees-Mogg will come a director in March.

Donald Lane and John Splavac of Informatics Inc have been given responsibilities within the company. Lane has been promoted from vice-president to president and general manager of the applications products division, replacing Splavac who becomes division vice-president at the company's Los Angeles headquarters.

Andy Graham has been appointed Southern area manager at Univac Computer Company. He joins from ADP Network Services.

Jerritts on the board

Stephen Jerritts has been elected to the House of Lords. He is president and chief operating officer of the company's information systems business in Minneapolis.

John Oke has joined Harris as a senior sales executive for the company's information systems international division in Slough. He previously worked for Honeywell at Zeus-Hermes.

Barry Payne has been appointed sales manager for Gees Microsystems. He was previously district sales manager at Control Data, and in 1979 was that company's manager of the year.

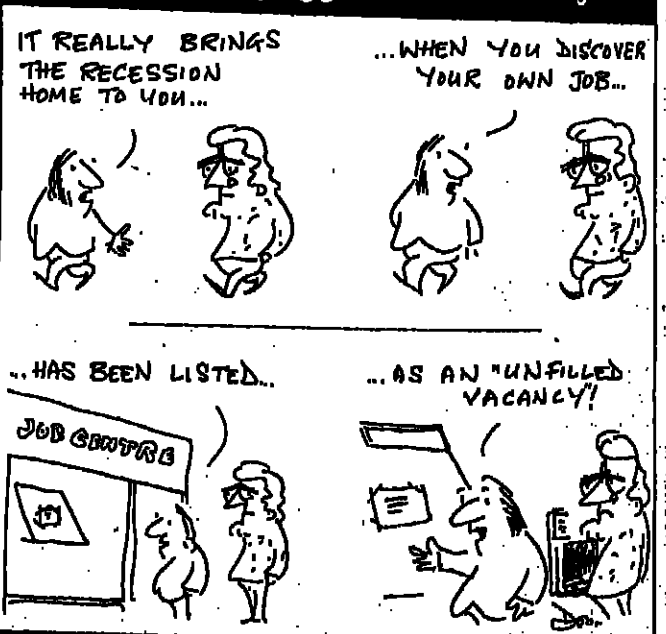
Sara Morrison and Paul Amb Weiller have been appointed directors of GEC. William Rees-Mogg will come a director in March.

Donald Lane and John Splavac of Informatics Inc have been given responsibilities within the company. Lane has been promoted from vice-president to president and general manager of the applications products division, replacing Splavac who becomes division vice-president at the company's Los Angeles headquarters.

Andy Graham has been appointed Southern area manager at Univac Computer Company. He joins from ADP Network Services.

Kelth Nichols has been appointed product marketing manager for CAD/CAM systems at Ferranti Cetec Graph-

Liveware File



DIARY

JANUARY 19
Automated documentation and testing of real time systems. BCS Cheltenham and Glos branch. Queens Hotel, Cheltenham. 7.30.
Use of graphics. BCS Glasgow branch. The Music Room, Staff Club, University of Strathclyde, John Street. 7.00.
Visit to IBA headquarters, Crawley. BCS Hampshire branch. Meeting in advance to Martin Must on Salisbury 20323.
JANUARY 20
Minicomputers in the oil industry. BCS Aberdeen branch. College of Commerce, Hoburn Street, Aberdeen. 7.00.
Joint meeting of BCS Belfast branch and Institute of Management Services control in high technology industry. Queen's Common Room, 1 College Gardens, Belfast. 8.00.
Factory automation and production control. Impact on TV manufacture. BCS Coventry branch. Maple Room, Fairfield Hall, Coventry. 7.15.
Meetings. Data communication group. BCS HQ, London. 6.30.
Medical computing. BCS Leeds branch. Parkway Hotel, Leeds. 6.30.
Communications in principle - the theory of communications and networks. IDPM W London Oxford branch. Caversham Bridge Hotel, Reading. 7.30.
Microcomputer workshop. IDPM Scottish branch. Edinburgh. 7.00.
JANUARY 21
DP remuneration and job satisfaction. IDPM Central London Branch. Pearl and Dean Studio, 11 Broadwick Street, London W1. 6.30.
Data dictionary experience. Database users group. Room 56, New Engineering Block, University College, London. 2.00.
Word processing. BCS Leicester branch. James West Building, Leicester Polytechnic. 6.15.
Micro trends. BCS Manchester branch. NCC, Oxford Road, Manchester. 6.15.
JANUARY 22
Designing a computer unit. BCS Coventry branch. Room N126, Leicester Polytechnic, Coventry. 7.30.
Half-day colloquium on the growing demand for manufacturing engineers. IBS/BCS. Bower Place, London. Details on 01-240 1871.
What's the point of Europe? Ball at Ferranti, MEP. BCS London branch. Waldorf Hotel, London. 6.00.

COURSES

INFORMATION Technology and People will provide a non-technical overview of current and possible developments in a course to be held at Central London Polytechnic, March 11-13. The emphasis will be on practical applications of information technology and its social, organisational and political consequences. It is thought that the course will attract a wide range of participants from industry, education and local government.

Organized by the Institute of Information Technology, the course will be held at the Central London Polytechnic, 240, Finsbury Pavement, London EC2A 4PU. For further information, contact: Mrs. M. J. H. Jones, Institute of Information Technology, 240, Finsbury Pavement, London EC2A 4PU.

COMPUTER WEEKLY

Classified advertisement: Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Box Numbers: Should be addressed to the Box number in the advertisement to Computer Weekly at the above address

Classified Rates: £19 per sec. 19 x 3 cols = £472. 20 x 3 cols = £1 470. Mail Page (19 x 3 cols) = £1 530. 30 x 4 cols = £1 792. Full Page (19 x 7 cols) = £2 900

Copy Deadline: 3.30 pm Monday prior to Thursday publication date. Complete artwork up to 11 am Tuesday. Advanced space reservation is advisable

MANCHESTER GLASGOW: Owen Kelly 061 872 8851. GECIL Aven 061 872 8851. BIRMINGHAM BRISTOL: Vic Sherwin 01 355 4938. Classified Production 01 641 3800 Ext 3104 Steve Lever

Appointments THE NEWSPAPER COMPUTER PEOPLE RELY ON Appointments

The sky's the limit...

Contracts for Analysts and Programmers

IBM Cobol and Assembler experience at various levels required for important new development project, six month contracts to commence shortly.	287	HOLLAND
IBM Systems programmers OS/VS1 and DOS/VS. CICS, Cobol and Assembler. Start immediately.	287	HOLLAND
ANY FORTRAN experienced programmers with Degree for long contracts. Knowledge of Petrochemical industry essential.	287	HOLLAND
IBM RPG-II and Cobol experience at senior and junior programmer level for major conversion.	287	HOLLAND
UNIVAC 1100 programmer with knowledge of Cobol, Assembler, TIP and DMS financial applications, to start as soon as possible.	282	E. LONDON
IBM PL/I programmer with sound CICS on DOS.	281	FRANCE
IBM B100 Cobol programmer with experience of DPPX, DTMS for new development work on Batch and on-line Billing systems. Knowledge of 4341 would be useful.	286	LONDON
DEC PDP 11/70 Basic programmer with good knowledge of RMS database. Long contract based in London, but with real opportunities for international travel.	286	LONDON

IMS CONTRACTS

If you have proven skills in IMS with PL/I using Structured Programming Techniques, then we have quality contract opportunities to match, both in London and overseas. Knowledge of TSO/SPF and RJE would certainly be useful if you wish to be a part of this major development project, at either programmer, analyst or systems level.

FOR MORE INFORMATION ON THESE AND OTHER CONTRACT OPPORTUNITIES, TALK TO THE KNIGHT SOFTWARE TEAM NOW. TELEPHONE DEWISE, MORAY OR THERESA ON 01-491 4706 DURING OFFICE HOURS OR 01-408 0280 EVENINGS OR WEEKENDS.

Knight Operations houses a full recruitment and contract service to the computer industry. We've been around for a few years now and if you have too, and you're wanting contract or permanent employment, why not call us now on 01-491 4706.

Contract vacancies

We are always looking for experienced operators with a good three years' technical experience and at present would particularly like to hear from good UNIVAC operators.

This week's permanent vacancies

DATA CONTROL **MIDD.**
If you have experience of Data Control work and job Assembly in an ICL environment, our client has two interesting openings. Days only. SALARY: £5,000-£6,500 p.a.

PRODUCTION SUPPORT **W6**
Outstanding opportunity for someone with three years' IBM experience and good knowledge of OS/360 and QJTS. Convenient for public transport. Days only. SALARY: c. £5,000 p.a.

OPERATOR **BERKS.**
PDP operators with RSTS/E experience urgently required. Excellent future prospects for right person. Good Co. perks. SALARY: c. £5,000 p.a.

SENIOR OPERATOR **SURREY**
Our client has vacancies for experienced OS/VS2, MVS JES-2 operators for their IBM installation. Excellent perks and promotion possibilities. SALARY: £5,000 + p.a.

OPERATORS **BERKS.**
Excellent prospects await you with this company if you have 18 months+ IBM experience, DOS or MVS (or both), 12-hour shift system. Installation is IBM 3031 with on-line terminals. Very good company facilities include subsidised restaurant, sports and social club. SALARY: £5,000 + p.a.

Always RELY ON KNIGHTS - Rachel Martin will be happy to discuss the above and other permanent vacancies with you and Sue Smyth, Joanne McKeggle and Elaine Revell can advise you on contract positions. 01-491 4706.

AT THE CENTRE OF EUROPE'S BIGGEST & CONCENTRATED COMPUTER MARKET

COMPEC EUROPE '81

CENTRE INTERNATIONAL ROGIER BRUSSELS, May 5-7, 1981

Europe's leading showcase for minicomputers, peripherals, terminals and microprocessors attracted nearly 6,500 trade buyers to the 1980 event. Visitors came from 15 countries worldwide with the majority consisting of directors, managers, data processing managers, systems managers, systems analysts, programmers, technicians, buyers, engineers and consultants.

Compec Europe '81 is sponsored by the world's leading computer publications COMPUTER WEEKLY, SYSTEMS INTERNATIONAL, DATA PROCESSING and PRACTICAL COMPUTING with support from the leading Dutch publication COMPUTABLE. Already the demand for stand space is outstanding. Ensure your participation in this prestigious event which serves the fastest growing sectors of the computer market.

FILL IN AND RETURN THE FORM BELOW

COMPEC EUROPE '81 STAND RESERVATION FORM

To: The Exhibition Manager, Compec Europe, ITC Exhibitions Ltd, 40 Bowling Green Lane, London EC1A 3DF, ENGLAND. Please provisionally reserve stand space at Compec Europe.

Name: _____

Company: _____

Address: _____

and send the undersigned more details.

01-491 4706
OR WHEN BUSY 01-439 3411

Knight Computer Services Ltd.
14 Old Park Lane, London W1Y 4NL.
Staff Services Division of BOC Data Solvive Group and a member of Computer Services Association.



COBOL H64 Programmers and Senior Programmers with COBOL and experience of on-line or DBMS systems required for implementation of advanced property management system being installed in the City by leading Software House. to £28K + benefits	ASSEMBLER HERTS. Programmers and Analyst/Programmers with Assembler experience on small minis or micros urgently required by fast-growing subsidiary of American terminal manufacturer. Basic an added advantage. to £9K	ICL 2950 Designers/Implementors with real-time, on-line experience on large mainframes (pref. ICL 2950), preferably with some networking/comms. experience required for implementation of major command and control system—NW London. £10-£13.5K
--	--	--

HOLLAND GERMANY Analysts, Designers and Programmers with real-time control experience on minis or micros (Assembler level), wanted to join European branches of Systems House specialising in the automation field. Generous relocation, some positions offering car. £13-18K	MILITARY COMMS Analysts and Programmers (graduates with 3-5 yrs in TP or on-line environment) required for new networking/comms project. Particular experience sought by our client: military, user definitions, access controls, networking, message switching etc. Project teams will be based on site in Bucks. £8.5-13.5K
---	---

PL/1 HOLLAND Programmers & Analyst/Programmers with 3+ years PL/1, ideally with some TP and DB knowledge required by Administrative headquarters of leading oil company in the Netherlands. £12-£16K	CORAL SURREY Programmers and Analyst/Programmers with CORAL and Fortran or Assembler on minis sought by Surrey-based Software House, previous involvement with radar systems an advantage. to £8.5K	CONSULTANTS Senior Consultants and Managers with wide applications knowledge and experience in client liaison, proposal writing, interpretation of tender documents, etc. required for London office of International Systems Group. to £14K
--	---	--

REAL TIME MINIS Consultants, Designers, Analysts and Programmers needed to join Plants-based teams working for leading UK Systems and Software House on military and communication projects. At least 5 years' experience in real-time systems, CORAL on PDP 11, DG Nova, Ferranti or GEC desirable. £8-12K	COBOL CHESHIRE Programmers (min. 2 yrs.), Analysts, Designers and Team Leaders with COBOL experience required for major new project being undertaken by Northern Branch of leading British Software House. Applications include order processing and pension management funds. Relocation offered where appropriate. £8.5-10K
---	---

MATRIX
D.O.E. Lic. No. SE145127

10 Grenville Place
London SW7 4RW
01 373 3063
to 8.30pm 7 days a week

COMPUTER ENGINEERS

Sophisticated Computer Systems

Applicon United Kingdom is the successful subsidiary of one of the world leaders in computer-aided design, draughting, and manufacturing systems. To keep pace with our projected growth, we need to expand our field engineering operation and require Computer Engineers to work out of our Stockport and Highgate offices.

Ideally, your background will include DEC PDP 11 experience and some exposure to computer graphics although full product training will be given in the UK and at our headquarters in Boston, USA.

An above average salary and conditions are available for the right men or women. A company car is provided and assistance with relocation is available where appropriate.

Applicon's place for the right men and women is now open. Please contact Geoff Matthews, Field Engineering Manager, Applicon, Regent House, Heston Lane, Stockport, SK4 1DA. Telephone 061-428 7227.

AI Applicon

White & Nunn

THE HIGH TECHNOLOGY PEOPLE
Technical Personnel Computer Staff Executive Recruitment

White & Nunn Personnel Services Limited
Unit 4, Station Approach, Fleet, Hants. GU11 3PQ. Tel. 02514 3477

Somerset

COUNTY TREASURER'S DEPARTMENT

COMPUTER AUDITOR

£8481-£9411

The Council currently operates an ICL 2958 computer which will be replaced in September 1981 by an ICL 2986. A computer auditor is required following the advancement of the career of the present postholder. Applicants are required to have practical technical experience of computers including a knowledge of programming and systems analysis, must be able to communicate effectively with management at all levels and, ideally, would have an appreciation of accounting or audit disciplines.

The postholder is responsible to the Chief Internal Auditor and is expected to make a major contribution towards the efficiency and effectiveness of the Council's financial control systems including the physical and operational security of the computer installation; the appraisal and development of new applications and enhancements to existing applications; the confidentiality of data and the provision of an information service to assist the audit function in general.

The post is suitable for a computer specialist. Ideally, applicants should have financial experience.

Applications, stating age, experience, education, present employment and the names of two referees, to:

County Treasurer (Ref. JS/RP), County Hall, Taunton

Prospective applicants wishing to discuss the post should ring Tony Parr on Taunton 73451, Ext. 688.

Closing date: January 23, 1981.

(2086)

ADS - Anker Data Systems (Pty) Ltd. - South Africa, the leading point of sale terminal manufacturer in South Africa, seek

EXPERIENCED COMPUTER ENGINEERS

preferably with a knowledge of Perkin Elmer Inter data. ADS is the sole agent in South Africa for Perkin Elmer terminals, CDC Disk Drives, Wangco, Drioo and Diablo Disk Drives, as well as various VDU terminals. ADS has 12 branches countrywide and approximately 30,000 units installed throughout the country.

We offer extremely competitive salaries and fringe benefits according to experience.

All applications should be directed to:

Mr. Horst Stegner
ANKER DATA SYSTEMS (PTY) LIMITED
P.O. Box 3138
Braamfontein, Johannesburg, South Africa.

(40481)

SAUDI ARABIA

We are seeking the following staff for Bachelor status contracts:

Analyst/Programmers
With approximately 3 years experience of IBM computers Cobol and JCL. Also be able to design programs; program maintenance and develop systems feasibility. (Ref. 6E)

Operation Restart and Recovery Specialist
3 years experience in the restart of on-line production job failures and the operation of a master terminal for on-line telecommunications facility. (Ref. 5E)

For application form, ring Gordon Newton on 01-522 6777 or write to Landowne/Middle East Ltd., c/o Landowne House, 26 Great Smith Street, Westminster, London SW1R 3BU.

DHSS HYPERTENSION CARE COMPUTING PROJECT

This project, which is based at Northwick Park Hospital, processes clinical data about patients being treated for raised blood pressure in a number of hospital clinics and general practices around the country. The processing is in present in batch on an ICL 1900 but a new 5-year grant has been obtained from the DHSS to extend the system and move it to the new local DEC 2080, and to acquire remote intelligent RJE terminals.

The project grant supports four posts for computing professionals and three of these are at present vacant. Applicants should have a formal training in computing up to graduate level for the equivalent length and breadth of experience. The length and type of post-graduate experience required varies with the different posts.

Principal Analyst/Programmer

£8,544 to £10,275 (NHS Scale 14)

This post is for someone with considerable technical knowledge and experience and the ability to lead the team. The appointee will help to choose the new equipment and to design and implement the new system. At least five years' post-graduate experience including the handling systems, programming in more than one language and supervising staff, is required. This appointment terminates with the current grant on May 31, 1985.

Senior Analyst/Programmer

£7,681 to £9,288 (NHS Scale 9)

This post is for someone to retrieve and analyse data from the file and help with the new system. At least two years' post-graduate experience of systems analysis and programming, preferably within a team, is required. This appointment is for two years.

Analyst/Programmer

£6,839 to £8,221 (NHS Scale 4)

This post is for someone to design and implement program and will afford the opportunity for some experience of systems analysis and design. It is suitable for someone who has received appropriate training and wishes to develop their career by obtaining practical experience. This appointment is for two years.

Further particulars and application forms may be obtained from the District Personnel Department, Hamersmith Hospital, Du Cane Road, London, W12. Telephone: 01-783 2030, extension 49. The closing date is February 2, 1981.

SENIOR SOFTWARE ENGINEER

A new post has been created for a Senior Software Engineer to help provide a high quality time-sharing computing service to medical research workers at the Clinical Research Centre. The existing ICL 1903A will shortly be replaced by a DEC 20/80.

The successful applicant will be responsible for acquiring a detailed knowledge of the TOPS 20 operating system and utilities of the new computer, for enhancing it and its user documentation.

In conjunction with other staff, he/she will develop and implement a policy of software acquisition and maintenance. He/she will also be responsible, in both professional and managerial capacities, for the work of the division's Junior Software Engineer and 3 Analyst/Programmers.

Applicants should have a good honours degree in computing science or an equivalent qualification, and at least six years of appropriate experience. The salary will be supernumerary, and not less than £9,500.

Application forms and further details may be obtained from Mr. A. Melnar, Staffing Officer, M.R.C. Clinical Research Centre (Northwick Park Hospital), Watford Road, Harrow, Middlesex HA1 3UJ, quoting ref. 108/3/4100. Closing date 30.1.81.

COMPUTER MANAGER CORNWALL

You must be looking for an opportunity to succeed in managing an IBM system 34 installation in a leading manufacturing industry, operating from our client's new 27 office site.

To achieve this you must have:

- comprehensive knowledge of RPBII
- ability to supervise a small team
- ability to implement new systems through the various stages

An attractive relocation package and competitive salary is offered. Ring Bernard Taylor on 01-388 0034, or write to Fraser Williams (London) Ltd., 38 Warren Street, London, W1P 8PD.

Fraser Williams Computer Consultants

LONDON, ST. ALBANS, LIVERPOOL, LEEDS, MANCHESTER, POYNTON, BIRMINGHAM, BOSTON, SHEFFIELD, GLASGOW, TORONTO, NEW JERSEY

MYRIAD

Outstanding opportunities exist for experienced Data Processing staff to play a significant part in the development of major international systems based on large IBM equipment. The company's European network links OSLO, STOCKHOLM, COPENHAGEN, VIENNA, MILAN, BRUSSELS, AMSTERDAM, PARIS, LONDON and currently vacancies exist in:

ZURICH & DUSSELDORF

Joining specialist project teams, the successful candidates will be involved in the system design, specification and programming of several financial and marketing based applications making use of the European network.

ANALYST/PROGRAMMERS... TO £16,000

- ★ 3 YEARS' D.P.
- ★ SOUND COBOL KNOWLEDGE
- ★ PREFERABLY IBM OS
- ★ USER LIAISON EXPERIENCE
- ★ RELOCATION ASSISTANCE
- ★ MODERN OFFICES
- ★ INTERNATIONAL SYSTEMS DEVELOPMENTS

The company is one of the world's most successful international organisations and offers a secure and progressive future to people appointed. The vacancies offer the opportunity to enjoy a high standard of living and considerable potential for personal career development.

Ref. N1/1501

EXPERIENCED RECRUITMENT CONSULTANTS

Expansion and diversification have created several outstanding opportunities for additional consultants with sound computing recruitment experience to join the Myriad organisation.

These positions will appeal to people with a successful record in recruitment consultancy who now seek to advance their careers within a major recruitment organisation.

Applicants should be well educated with computing experience gained in a commercial environment. Capable of working on their own initiative, candidates will have good communicative skills and the ability to succeed in a challenging and professional environment with few constraints.

The Company offers a secure and progressive future with salary potential directly related to one's personal achievements. If you feel you are the person for whom we are looking, please telephone to arrange a confidential meeting to discuss the matter in detail.

Ref. AW/1501

COMMUNICATIONS CONSULTANT

HARROW MIDDLESEX C. £10,000 + COMPANY CAR

The planned development of new communication systems including Data/Voice Networks, Electronic Mail and Message Switching has created the challenging post of Communications Consultant within our client's Advanced Projects Department.

Candidates will be required to demonstrate good experience of micro computing and telecommunications to enable them to review current technology, design and project manage these new developments to successful completion.

This is a senior appointment and the successful candidate will communicate with all levels of User Management up to Board level in addition to liaising closely with outside organisations including manufacturers.

Our Client is a highly successful commercial organisation and the starting salary is further supported by an attractive package of benefits.

Ref. NW1/1501

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01-453 0981 24 hours

JBA**Manufacturing Systems Spec.****£13,000**

Surrey
Only very occasionally does an opportunity arise to join a world-wide organisation and take control of the U.K. operation.
To qualify for consideration it is essential to have extensive knowledge of IBM System 34, RISC II and MAPICS. As this is an unusually demanding role it calls for a combination of organisational and technical skills, also the ability to make decisions and deal with people at all levels.
Ambitious, self-motivated and professional people will find significant prospects, good financial rewards and travel opportunities with this international corporation.
Contact: Janet Chivers

Sales Executive**c. £18,000 + Car**

London
We have been retained by a highly successful systems company to recruit for them an experienced Sales Executive.
Candidates will be required to sell a range of equipment which is based on software driven terminal systems which, at entry level, are plug compatible. These include IBM, ICL, Honeywell and Univac, but have the capacity to support a wide variety of software and hardware in the distributed processing marketplace.
It is essential that applicants have at least three years experience and can provide a proven sales record to date.
Contact: David Hendry

Banking Consultants**London Based Up to £16,000 + Car**

A leading consultancy organisation, with a well established record in the finance and banking sector, wish to appoint a number of specialist consultants to advise and assist clients on the design and development of new systems.
Applicants should have at least five years in depth with a substantial amount of time spent in a banking/finance environment. For the more senior positions our client expects a minimum of eight years experience. Specific background in developing foreign exchange and loans and deposits systems on IBM or DBC hardware in particular, would be advantageous.
Excellent working environment with the highest professional standards.
Contact: Jim Baker

Senior Systems Designers**London Based Up to £15,000**

Experienced Systems Designers are required immediately by our client, a leading computer consultancy, to take a key role in the design of a large real-time communications system.
Applicants should have at least six years in the design of mainframe (preferably ICL) applications and be capable of selecting hardware/software/packages for inclusion in a system. Direct involvement with database (DBMS), graphics or communications would be an asset.
Excellent salaries according to experience. Possible assignments in B'ham.
Contact: Jim Baker

Systems Analysts - Insurance Systems**Rural Hampshire to £9,500 + Mortg. Sub. + Bens.**

A large and expanding insurance company are seeking additional Systems Analysts to strengthen project teams involved in existing design and development work.
Current configuration includes Redifon mini and Sunnyside B6800 mainframe, incorporating batch systems and on-line testing facilities.
A business systems involvement, including 2 years systems analysis and experience of COBOL, are the main qualities sought.
An excellent benefits package includes mortgage subsidy, generous relocation expenses, low interest loans, plus others.
Contact: Brian Festies

Programmers**Wembley Park Up to £9,000**

A distributed multi-national company based in Wembley Park are currently developing an HP3000 system and so require a number of Programmers to support their teams.
Candidates should have at least 2 years experience of COBOL programming, preferably gained in an HP3000 environment. Previous experience of Real-Time would be advantageous. Comprehensive training will be given in a number of areas. Usual large company benefits apply.
Contact: David Hendry

Sales Support**London Based Neg. to £8,000 + Car**

(Mini Systems)
A real chance to join an organisation which has grown in influence and whose achievements reflect the acceptance of its products in expanding multinational markets.
If your present responsibility is to develop and implement mini-based commercial business systems and you feel that the next challenge is a move into sales support then our client, a mini computer manufacturer, is able to offer opportunities in this area.
Analysts and Programmers with sound BASIC experience, will be considered for business support positions. A background of commercial applications is essential.
Contact: Margaret Stevens

Communications Programmers**London c. £8,000**

We have been retained by an international consultancy organisation, who are expanding their development in Videotex systems, to recruit two software programmers to be involved with this exciting application.
Applicants should have at least two years' programming experience, preferably with FORTRAN or PL/I or VAX II, in a communications environment. Knowledge of X.25, 9970 packet message switching would be an advantage. Ability to work with users and through supervision is essential.
The job involves colour business graphics and networking.
Contact: Jim Baker

JAMES BAKER ASSOCIATES
International Personnel Consultants
25 Savile Row, London W1
Tel: 01-438 9311

**Programmers
and Operators~
We think you'll like
our latest number**

IBM 4341

We have recently installed a new IBM 4341, running under OS/VS1 and VM/CMS, to replace a bureau service from our parent company.

It is therefore an opportunity to bring your IBM experience right up to date on the development and implementation of new systems projects offering exceptional challenge and interest.

We now need the following experienced men and women to join our newly formed Information Systems Department:-

PROGRAMMERS

Candidates should have at least one year's PL1 experience or, alternatively, be able to offer Cobol coupled with an IBM background.

OPERATOR

Should have at least one year's experience on either VM/CMS or OS/VS1. A rotating 2-shift system will be in operation for the above two posts for which a premium is payable.

As a Member of the Allied Breweries Group of Companies, we can offer genuine career prospects, competitive salaries, and a range of valuable fringe benefits which include BUPA and a contributory pension scheme.

Please telephone or write for an application form and more information to Mrs. B. Cooper, Personnel Services Officer, Britvic Limited, Britvic House, Broomfield Road, Chelmsford, Essex CM1 1TU. Telephone Chelmsford (0246) 81871 (ext. 128).

Britvic

(4000)

**EXPERIENCED
SCIENTIFIC PROGRAMMERS**

With prime task in development of application software on large IBM MVS Systems.

**AND
EXPERIENCED REAL-TIME
MINI COMPUTER
PROGRAMMERS**

With prime task in development of technical applications on HP 2100 and HP 9845 T Systems.

- ★ Large multinational company
- ★ Highly competitive salary
- ★ Fringe benefits
- ★ Career progression
- ★ Foreign travel



WESTERN GEOPHYSICAL
P.O. Box 18, Isleworth, Middlesex TW7 5AB
Telephone: 01-560 3160

(4000)

BOX Nos.

See number below and apply to:
Addressed to:
Box No.
c/o Computer World
25 Savile Row
London W1 4DB

URGENT - RUSHI - RUSHI

MVS DESIGNER/PROGRAMMERS
COBOL & PL1 PROGRAMMERS
SYSTEMS ANALYSTS

**MANAGEMENT &
EXECUTIVE SELECTION**

telephone 01-637 9611

**SCOTLAND
Computer Graphics
SALES EXECUTIVE
£10K Basic**

plus excellent commission & 2 litre car

The world leader in the manufacture and supply of computer graphics has an exciting opening in Scotland for an ambitious salesman able to handle board-level negotiations and communicate on a technical basis. This position involves maintenance of a customer base and new business development. The financial rewards are exceptional and the benefits are what one expects from a multi-national.

**IF YOU LIVE IN SCOTLAND PLEASE
CONTACT TONY McGRATH ON 01-637 9611.**

**RECRUITMENT
CONSULTANT**

As a highly successful specialist recruitment consultancy operating throughout the UK, we offer a service to our clients and candidates second to none.

We are currently seeking another consultant to join our team recruiting staff for the systems and programming side of the industry.

You will have a sound general knowledge of the computer market with a sales orientation, a sales support background would be ideal. The pace is fast but the rewards great with a remuneration package that reflects our status and performance in the industry.

Call for a chat and make 1981 your year.
Phone Diane Oubridge on 01-637 9611.

NOTICE BOARD

**Sell a
business solution**

£8K

+ Commission + Car

NORTHERN HOME COUNTIES

One of the most important and successful companies in the UK software market have asked us to find two sales executives for Essex, Bedfordshire and Hertfordshire. Experience in software sales and an ability to negotiate with Blue Chip companies are the necessary qualifications for our new and successful career for the '80s.

Telephone Ruth Herman on
01-637 9611.

**FOR THE SALESMAN
WHO HAS EVERYTHING!****Minimum £18K + 2 Litre Car
LONDON**

When you are a computer manufacturer with an outstanding record in growth, and products which are market leaders, only the best salesmen are good enough. Have you worked in a mainframe environment? Or do you have an excellent mini computer sales record? Ideally, if you can combine this experience with a background in stockbroking, our client will offer you an excellent basic salary, and a highly motivating commission scheme and some of the best career prospects in the industry.

For more details contact Robin de Rouen on 01-637 9611.

**SELLING IN THE
FINANCIAL
MARKET**

Banks, Insurance Companies, Pension Funds - these are all parts of the business world that are growing. The leaders in the sale of computerised services to this market have asked us to find sales executives to help them expand even further.

If you are a graduate and have a strong financial or computer sales background this is a chance to join a highly successful company who are part of a major group.

For more details please contact Ruth Herman on 01-637 9611.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT &
EXECUTIVE SELECTION

THORBAR

A DIVISION OF INBUCON MANAGEMENT CONSULTANTS LIMITED

REF: CW/4/81

SYSTEMS DEVELOPMENT MANAGER U.K. TO £14,000 + CAR + BONUS

FOR
INTERNATIONAL COMPANY WITH WORLDWIDE OPERATIONS
AND A LEADER IN ITS FIELD
OFFERS
PLANNED MAJOR DEVELOPMENT—USING LATEST TECHNIQUES
REAL-TIME — DATABASE
ON-LINE PROGRAM DEVELOPMENT
UNIQUE CAREER PROSPECTS

You probably graduated about eight to ten years ago, certainly have programmed and acquired considerable business systems experience — covering a range of commercial applications on IBM equipment. You have performed so far has demonstrated that you truly understand users' requirements and problems. In addition you possess the potential to move into a Senior Management role.

TELEPHONE US NOW (24-HOUR ANSWERING SERVICE) OR WRITE TO US IN
ORDER TO ARRANGE AN IMMEDIATE INTERVIEW — EITHER IN LONDON OR
THE SOUTH — AS OUR CLIENTS WISH TO MAKE THIS APPOINTMENT IN
JANUARY.

INBUCON MANAGEMENT CONSULTANTS LIMITED
D. P. Appointments & Contract Personnel,
Greenock House, 19 Cuckfield Road, Hurstpierpoint,
Sussex BN6 9RP. Telephone: Hurstpierpoint (0273) 833848.

INBUCON

Self-motivated Assembler Programmer/Analysts Start here

for European and Stateside travel
to £10,500 + car Self-motivated people who have the abilities required for small companies in large environments are a rarity. Invariably they cannot offer the balance between solid and effective programming skills for mini and micro applications whilst being able to handle themselves in client situations, probably in strange surroundings. As a result, we have been retained by our client to introduce to them, candidates from this rare breed.

The company, formed 6 years ago, offers full European software support to a major OCR manufacturer, and are successfully marketing 8080 based data entry and commercial micro systems. This exciting opportunity to take responsibilities for implementation and design is backed by a generous compensation package including a car. To continue your interest, please contact Capp Associates quoting reference CW 100-IF for immediate attention.

CAPP ASSOCIATES
Capp House, 90 South End,
Gordon GR9 5SD
01-666 8883
Computer and Professional Personnel Consultants

Computer Operations Supervisor and Senior Computer Operators

The British Council works overseas in about 80 countries and is engaged in a wide variety of educational and cultural activities. Our KCL 2960 is currently being operated under contract but we are planning to start our own staff. We are looking for a Computer Operations Supervisor and two Senior Computer Operators to work in the KCL building at Putney, where our computer is housed, on our batch processing and on-line applications which run under DME and GEORGE 2.

The Computer Operations Supervisor will have responsibility for controlling day-to-day operations and supervising Council staff in the computer room and media library. Duties will include scheduling work, liaison with Council departments in central London and with ICL, responsibility for ordering supplies of computer consumables, tapes and discs, liaison with engineering services, maintaining control electricity, and providing holiday and sick leave cover. Applicants should have a good general education and at least two years' experience in computer operations including GEORGE 2. Knowledge of the KCL 2960 operating under DME, and communications or systems software would be an advantage.

advantage. Starting salary is £7966 rising to £9571, 22 days annual leave plus 2 1/2 privilege days. Non-contributory pension scheme.

The Senior Computer Operators (2 posts) will act as shift leaders, each shift consisting of one senior and one junior operator. The senior operator will be responsible for running the work of the shift and will share operating duties with the junior operator including controlling the 2960 through its VDU console, loading computer peripherals and general maintenance of the computer hardware and software. Applicants should have a good general education and previous experience as a computer operator. They should be capable of working under maximum supervision and should be good at dealing with all levels of staff. Experience of ICL software and hardware, knowledge of GEORGE 2, or communications facilities would be an advantage. Applicants should be physically fit. Computer operators normally work a Monday to Friday 2-shift system (0800-1600 and 1600-2000 hours) alternating shifts weekly. Starting salary is £8916 at age 20 or over, rising to £7761. Pension payments are payable following one year's satisfactory performance in the post. 20 days annual leave plus 2 1/2 privilege days. Non-contributory pension scheme.

For further details and an application form, to be returned by 30 January 1981, telephone 01-930 8466 ext 2531 or 2544.

Staff Recruitment Department
THE BRITISH COUNCIL
10 Spring Gardens, London SW1A 2BN. Tel: 01-930 8466 ext 2531 or 2544.

IMS Systems Programmer

Amsterdam -1 year £19,000+p.a.
Initial posting inc. benefits

We are seeking a systems programmer with one or more years IMS experience. The initial assignment is to spend one year working as a member of a 3-man team in the Netherlands. The other team members consist of a senior systems programmer and a trainee, and the specific duties to be performed include getting and maintaining 1.1.6; planning for and implementing 1.2; providing advice and support to application development teams; and assisting in the evaluation of new DB/DC facilities and techniques. Our client's data centre runs MVS/SE and has a heavy IMS transaction load, with links to internal and external networks.

IMS DB Support

Netherlands -9 months+ £19,000+p.a.
Initial posting inc. benefits

We are seeking an IMS specialist with a good understanding of IMS database design, and familiarity with IMS utilities plus the technical aspects of DBA work. The initial assignment is to work for at least 9 months in the Netherlands, assisting in the implementation of IMS at a VM/VS1 4341 installation, which has several existing systems running on a non-IBM DBMS. Duties will include database design for existing and planned applications; the generation of DBD's, PSB's, etc; setting up IMS standards and procedures; and the provision of training and technical support to application development groups.

CDS is a 45-strong Anglo-Swiss consultancy specialising in providing Systems Programming, Database and Telecommunications support to European IBM users. The majority of our staff are employed by CDS AG of Zurich, but we are also prepared to enter into agreements with independent consultants.

For further details of these positions, please telephone or write to Jim Shaw at our UK offices, or call during evenings/weekends on 0990 24546.



**The IBM System
Software Specialists**

CDS Ltd, 67-73 Park Street, Cambridge, Surrey GU16 3PE, Tel. 0276 25846 Telex 858082

COMPUTER SYSTEMS ANALYSTS

up to £20,700 p.a. after tax
Be in at the start

ARAMCO operates in Saudi Arabia and is the largest of producing company in the world. Despite the size of operations - offshore include the largest onshore and offshore fields in the world - ARAMCO is continually seeking further ways of enhancing recovery from existing oilfields and is still exploring, developing and expanding at a rapid rate.



In support of these activities one of the most modern identification/evaluation computer system in the Middle East is being built in Dhahran, the main administrative centre of ARAMCO in Saudi Arabia. The system is due for completion in October 1981 and should be fully operational by January 1982. Initial configuration will include three IBM 3033 systems and one IBM 370/168 which will have the ability to connect to about 15 million bytes of core memory. State of the art computer systems, including IBM and non-IBM systems will be installed and the system will support a large 1.5 Mbit effort to help ARAMCO at the forefront of computer applications in the oil industry.

There will also be three of the world's most sophisticated reservoir simulation and other software in respect to well performance analysis and seismic data processing. A large database system will also be installed.

If the prospect of being in at the start appeals to you and if you have a degree, or HNC, in a computer science we would like to hear from you. We particularly need:

SYSTEMS ANALYSTS to work on capacity planning and service level analysis, system modelling, physical planning and change/upgrade control. A minimum of 3 years experience with large computer systems, preferably IBM and solid engineering technical concepts. Familiarity with large IBM systems, Fortran and PL/I is required.

COMPUTER SYSTEMS ANALYSTS (GEOPHYSICAL) to develop, install and maintain geophysical computer applications systems. Applicants should be conversant with seismic processing techniques or geological data management systems. Systems design and programming knowledge is important and experience with large IBM systems, Fortran and PL/I is a must.

Find out more about working with ARAMCO by telephoning John Wynn on Harrogate (0423) 88961 TODAY, or write to Dept PU/0115. Interviews will be held in the very near future.

ARAMCO **IPMC**
INTERNATIONAL RECRUITMENT
5 EAST PARADE, HARROGATE,
NORTH YORKSHIRE HG1 5LP

The Professional Approach to your Career

JBA

SAUDI ARABIA Analyst/Programmers to £19,000 + car + accom.

This established software consultancy is continuing to expand rapidly and has an urgent requirement for experienced Analyst/Programmers. Working in the areas of on-line commercial applications, including inventory control and accounting, you must be dedicated and energetic and be capable of taking projects through from feasibility to on-site implementation. Essential qualities are knowledge of IBM SYS 34, 3-4 years COBOL plus substantial analysis experience. Bachelor status is preferred but equal consideration will be given to married applicants without children. Tax free salary, plus furnished accommodation, and a company car are included in an excellent package. Initial interviews will be held in London.

Contact: Brian Postles

Designers & Programmers — Security Software

London/Bucks based Up to £13,000
One of the leading software houses has immediate opportunities for Designers and Senior Programmers to join a team developing a sophisticated real-time system where the security aspects are of prime importance. Candidates must have been involved in the design, development and programming of security software for large mainframe and real-time applications. Experience in designing controls for access to systems, passwords and other types of checking is essential.

Contact: Jim Baker

Product Support

Thames Valley c. £10,500 + car
Our clients are the originators and distributors of a world renowned range of Database and T.P. software products. They are currently looking for good all-round DP technicians to work in their Product Support Group. Applicants should be well versed in business techniques, and must have a thorough understanding of commercial data processing. An IBM programming and analysis background is essential. The ability to communicate with customers will be an important requirement of the successful candidates together with obvious technical ability. A unique opportunity for small team involvement within a technically advanced environment.

Contact: Margaret Stevens

Programmers

Bucks Up to £9,000
Our client, an expanding systems consultancy are looking for a number of programmers to design and develop specialised software for turnkey and on-line projects. Applicants should have a minimum of one years RPG, COBOL or CORAL, or any other standard high level language.

Contact: David Hendry

Senior Systems Analyst

N.W. Kent up to £9,000
Our client, a successful specialist engineering and manufacturing organisation, has an opportunity for a Systems Analyst who is looking for a career step with considerable future potential. Candidates should be graduates, or professionally qualified, with an extensive systems background in developing commercial applications, preferably in a manufacturing environment using ICL equipment. This is a key appointment in D.P. development and applicants must have the personality, presence, leadership, intellect and capacity to deal with all levels of management and staff. Large Company benefits.

Contact: Jim Baker

Analyst/Programmers (BASIC + 2)

City to £9,000
Our client, an interesting and unusual financial organisation, is looking for experienced Programmers to join them at a time when they are installing two PDP11/70s. A minimum of two years experience of BASIC+2 or BASIC+2 language from a financial or commercial environment, together with a knowledge of Commodore and DEC hardware would be a definite advantage. The ability to understand users and their problems is essential. Good salaries and generous benefits are offered to successful candidates.

Contact: Janet Chilvers

Communications Programmers — Babbage

South West of London £8,000 - £9,000
Continuing expansion of our client's international Videotex business has created opportunities for GSC 4000 Babbage programmers in real-time and network systems. Applicants should have at least four years programming experience and be capable of working packetswitching colour and business graphics, in this fast moving and exciting field. Possible overseas travel.

Contact: Jim Baker

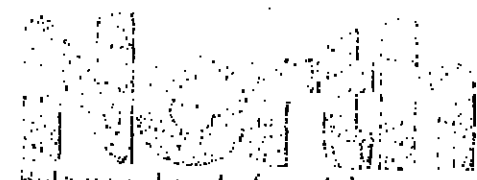
Mini Support Analyst Programmers

London £7,000 - £8,500
Due to steady expansion, our Client, an internationally known mini manufacturer, specialising in the marketing of handling word processing and library circulation systems, wishes to recruit two programming professionals to join their development/support team. A minimum of two years on-line programming experience, preferably gained in a mini environment, would be ideal, but consideration will be given to high calibre candidates with a sound on-line programming background. Training facilities and career prospects are excellent as this organisation firmly support promotion from within.

Contact: Isobel Bruce

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9811.

Computer People,



Below are listed a few of the contract assignments and permanent appointments which we are seeking to fill. To discuss these opportunities or to register with us, telephone Computer People North on 051-491 1654, or mail the coupon below.

Permanent Appointments

Systems Analysts North West £9000 required for major organisation who are expanding. At least three years commercial systems experience on any mainframe. Excellent package + bonus. Ref: DE/245.

Programmers Manchester area To £9000 needed for a nationwide software house. Experience of BASIC on PDP 11's in a commercial environment essential. Interested? Contact giving Ref: DW/198.

IBM COBOL Programmers South Manchester £8000 needed now to join a major service organisation. TP experience an advantage, excellent package including relocation. Ref: DE/352.

Programmers and Analysts N. Manchester £7500+ If you have Burroughs experience you are required for an expanding installation. Financial and manufacturing background preferred. Ref: DW/149.

Contract Assignments

ICL 2900 Systems Analyst
ICL VMEB COBOL Programmers
HP 3000 Image Analyst
370 DOS/VSE Systems Programmer
COBOL MKIV Analyst/Programmer
Business Analysts
370 OS System Programmer
370 COBOL CICS/DLI Programmers
370 CICS SYSTEMS Designers
S34/38 Analyst/Programmers
Burroughs DMS2 GEMCOS Programmers
370 COBOL/Fortran Analyst Programmer
S34 RPGII Programmer
2904 COBOL/RPGII Programmer
370 COBOL Filetab Programmer



There are numerous contract and permanent vacancies in the Midlands region, and a few are shown below. Get more information by ringing Computer People Midlands on 041-443 8501, or by mailing the coupon.

Permanent Appointments

Project Manager East Midlands c£9000 pa + car IBM background required, SYSTEM 3 preferred with RPGII/COBOL Programming experience. Must have at least 6 years D.P. background together with management skills. Ref: RB/J328

Senior Programmers Analyst Programmers Birmingham Area To £9.5K for massive new development. Experience with any of the following: IBM IMS, PLI, COBOL, APL or CICS is necessary. Ref: DD/J323.

Systems Analysts Birmingham Area To £9000 pa Challenging IBM environment undergoing major reorganisation and development. COBOL programming experience desirable. Excellent opportunities available within a well-integrated project team. Ref: PH/J324.

Programmers/Analyst Programmers Birmingham area to £8000 pa Real-time or on-line mini experience - preferably DEC or IBM together with BASIC/BASIC+. Minimum 2 years D.P. experience. Excellent opportunities. Ref: PH/J327

Contract Assignments

IBM 8100 Analyst Programmer
SHADOW TOTAL COBOL Programmers
PLI IMS Programmers
OS COBOL Analyst Programmer
ICL ME 29 COBOL Analyst Programmer
U90/30 OS3 COBOL IMS90 Programmers
U418 Assembler Programmer
H64 TDS/IDS COBOL Programmer
PDP 11 BASIC+2 RMS Programmer
HP3000 IMAGE COBOL Programmers
BTI 4000/5000 Consultant
Q & M Consultant - Manufacturing
APL Programmer
DEC RSX 11M MACRO 11 Programmers
FORTRAN Programmers

Wherever you are.



The Greater London area, and the Home Counties and all the regions serviced by Computer People London, and the opportunities available here are a small selection. For details of our vacancies, call on 01-836 8411, or mail the coupon.

Permanent Appointments

Senior Project Leader East London/Essex c£11000 Sound analysis experience from a commercial background is required, preferably on IBM hardware. Good COBOL knowledge is an advantage. Ref: F/11805

Analyst Programmers and Programmers St. Albans Herts £8000 - £10,000 A minimum of 18 months experience, of RPG, BASIC or COBOL to work in an expanding software house. Good promotional prospects. Ref: SN/10545.

Analysts Saudi Arabia to £21000 A leading oil company needs experienced analysts with at least 3 years PL/1 to work at their developed complex on the Arabia Gulf. Ref: PM/58C

Command and Control N.W. Home Counties £9000 - £15,000 Systems Software Specialists with some knowledge of communications, military applications, message switching, database, graphics or security systems are required at all technical levels for a major project. Senior positions could also command a company car. Ref: CB/11816.

Contract Assignments

IBM SERIES 1 Programmer
PLI Programmer with RPGII on System 34
OS PLI IMS DB/DC Programmer
ICL System 10 ASSEMBLER
IBM DOS Systems Programmers
IBM SVS/MVS Systems Programmers
IBM DOS/VS PLI Structured Programmers
PDP 11/5 Programmers
ICL 1900 G3 Analyst
IMS DB/DC COBOL Applications Designers/Programmers
IBM SYSTEM 34 RPG2 Programmers
IBM 8100/3790 Programmers
IBM DOS/VSE DLI CICS COBOL Programmers
PDP ARBAT AIMS Programmers
NCR V8585M/V8565 LEVEL 2 COBOL Programmers



For details of our vacancies, call on 01-836 8411, or mail the coupon.

Permanent Appointments

Systems Analyst Woking Surrey £8500 You should have in excess of 3 years commercial experience. The company utilise an ICL 2960, therefore experience gained on ICL mainframe would be advantageous as would knowledge of insurance applications. Ref: MB/1.

Programmers Surrey Salary negotiable Urgently required experienced IBM Programmers to work on Banking applications. Knowledge of IMS DB/DC or CICS DLI would be advantageous. The Company offer a very high remuneration package coupled with the usual benefits associated with a Banking organisation. Ref: MB/2.

Analyst Programmer Ashford Kent £8000 A world-famous Company are looking for a Programmer with at least 2 years PDP FORTRAN and a good knowledge of RSX 11M to aid the implementation of and maintain a graphics package, liaising with both UK and abroad. Full relocation. Ref: SAB/1.

Systems Analyst Kent Package £10K (Inc. mortgage subsidy) Minimum of 3 years experience in design and implementation, preferably with an insurance/financial background. The installation offers both mainframe for processing and mini computers for datacapture. Flexitime, relocation contributions etc. Ref: SAB/2.

Contract Assignments

Burroughs 1800 MCP COBOL Programmer
Burroughs 6700 MCP COBOL Programmer
IBM 370 IMS Database Programmer
IBM 370 OS COBOL Programmer
IBM 370 OS COBOL/IMS Programmer
IBM MARKIV Programmer
IBM 370 OS COBOL Programmer
IBM 370 CICS/DLI Analyst Programmer
ICL 2900 COBOL Programmer
ICL 1900 COBOL Analyst/Programmer and Programmer
PDP 1134 RSX 11 FORTRAN Programmer
PDP 1134 RST/E BASIC+2 Programmer
UNIVAC 9030 SYSTEMS Programmer
UNIVAC 9030 COBOL Programmer
HONEYWELL 66 COBOL TDS IDS Analyst/Programmer

Job no 1110

For details of ☐ contract ☐ permanent work mail this coupon to:
Computer People North, Freepost (no stamp), Sovereign House,
Stockport Road, Cheadle, Cheshire SK8 2YD.

Name _____

Address _____

Tel (day) _____ (ev/wkd) _____

Computer People North • 051-491 1654

For details of ☐ contract ☐ permanent work mail this coupon to:
Computer People Midlands, Freepost (no stamp), Alpha Tower,
Birmingham B1 1BR.

Name _____

Address _____

Tel (day) _____ (ev/wkd) _____

Computer People Midlands • 041-443 8501

For details of ☐ contract ☐ permanent work mail this coupon to:
Computer People London, Freepost (no stamp), VLI House, London
WC2N 4BR.

Name _____

Address _____

Tel (day) _____ (ev/wkd) _____

Computer People London • 01-836 8411

For details of ☐ contract ☐ permanent work mail this coupon to:
Computer People South, Freepost (no stamp), 27 George Street,
Croydon CR0 9ED.

Name _____

Address _____

Tel (day) _____ (ev/wkd) _____

Computer People South • 01-890 4013

CoOperators

While the economy is sagging around us, we at CoOperators have expanded our services. Since 1974 we've been leaders in the contract operations field, and now we are proud to announce our new permanent recruitment division, headed by Kay Stebbings.

A few permanent career opportunities are shown below, and there are many more throughout the U.K.

A new service for 1981

If you're thinking of changing your job you should be talking to Kay-Mary or Madeleine at CoOperators. Ring 01-836 8411 or mail the freepost coupon TODAY.

If it's contract work that you're interested in, we have a constant supply of contract assignments - at home and abroad - so make sure you're registered with us by ringing Liz or mailing the coupon.

Permanent Appointments

IBM Senior Operator £6-£6.5K Mid-Surrey
Wide scope for promotion can be offered at this dynamic and expanding IBM 3031 installation. Our client's current requirement is for a competent console operator who has a sound working knowledge of OS/VS2 with MVS and JES2 coupled with the ability to act as a senior member on shift. Company benefits are excellent including relocation assistance. For further details please phone Kay. Ref: IP13/CW

IBM Operator £6.2K City A large, international, centrally located company is offering a good salary and excellent company benefits for a good DOS/VS or DOS/VSE operator with 18 months experience. A knowledge of CICS and BTAM would be an advantage. For more information regarding this position, where good opportunities exist for training and promotion, please contact Mary. Ref: IP5/CW

Operations Manager £10.5K package Kent coast
A professional Operations Manager is sought for our well-established client who has recently installed new hardware at their installation based on the Kent coast. The ideal applicant will not be less than 30 years old, have proven supervisory experience and the ability to provide good documentation. Knowledge of the insurance field would be a distinct advantage. Relocation assistance available. For further details please phone Kay. Ref: KS27/CW

Network Controllers £5K+ days NW London
Responsible operators with experience of teleprocessing networks are required by a national company. Good future prospects with large company benefits are offered in return for your skills in TP Network Control, fault processing and client liaison. For further details please contact Mary. Ref: MC24/CW

CONTRACTS..

In this article Geoffrey Richardson, general manager of Computer People South, takes a personal and a business view of the South of England, and its characteristics as a market for freelance

and contract staff. Richardson joined the VNG Group (of which Computer People South is a member) in 1976, and has risen through sales and management positions to the control of CPS.

The South offers opportunities away from big-city blues

THE North, Midlands and London all have hubs of business and generally a common industrial theme, while the South has a more varied business structure and no single specific theme of industry.

For the purpose of this article I have defined the South as Kent, Surrey, Sussex, Hampshire, Wiltshire, Dorset, Devon and Cornwall. The computer contract professional knows that London has plenty of work, and it has been excluded for that reason.

Industry in the South is scattered far and wide. For example, Lancashire has an area of 2,276 square miles while Surrey spreads over 647 square miles - Lancashire has the two main population and industrial centres of Merseyside and Greater Manchester with Surrey focusing on Croydon.

Outside Merseyside and Greater Manchester Lancashire's installations are located in some 26 towns while in Surrey they are located in 49 towns and villages.

What confuses the picture is that Surrey has the highest traffic density in the country and the highest population ratio of residents employed outside the county - mainly in London.

A further analysis of Surrey would show that the majority of service industries (banking, insurance, etc) in the county are those which have elected to move away from the high overheads of central London sites with related travelling and commuting costs.

Most of the other installations are light manufacturing, pharmaceutical, scientific research and systems houses.

Recession

The same analysis of each county, bar Devon and Cornwall, would show broadly similar results.

There is no doubt that the recession has hit the South as hard as both the Midlands and the North, but I remain convinced that the future holds a great potential as yet untapped in the contract market.

Why? During the past eight years there has been remarkable growth in the contract programming market nationwide, created by the general shortage of computer staff and the raising of standards by contract programming agencies.

More than ever, the contemporary customer is geared to using contract personnel to combat high workloads and skill shortages.

The customer now finds the a delicious mix of contract and permanent staff solves his short-term needs.



RICHARDSON: "Market holds great potential"

The contractor tends to be considered a valued adjunct to the permanent staff, rather than the necessary evil he or she was at one time.

Contract agencies have concentrated their efforts until now predominantly in the high-density centres of commerce and industry, and in the South - which has meant Croydon, Brighton, Portsmouth, Bournemouth, etc.

Message

That same analysis applied to Surrey, would show that only 80 of 340 installations within the county are based in Croydon, leaving 260 spread around those 49 satellite towns and villages and it is this area that has remained untouched.

The reasons are logical yet changing: first, many of the 260 installations are small in comparison with city sites and agencies have tended to concentrate on major development work undertaken by large companies.

Increasingly, however, smaller companies are finding the relatively high cost of software house involvement difficult to pass through the finance director and are prepared to heed the agency message - no strings, no over-commitment, full control, less cost.

Second, fewer contractors are prepared to work in the outlying areas, preferring to stay with the core of commuting, an increasing number of contractors are seeking the benefit of uncluttered rather than rush-hour traffic.

Third, the agencies have preferred to locate themselves within the city centres - supposedly near the "action".

Agencies are now spreading their wings, however, effectively providing their services from suburban and country bases.

What, then, does all this indicate for the experienced

contractor and the computer professional who is contemplating contract work in the future?

Since the majority of computer installations are still in the city centres, it is not surprising that most contractors spend their time on commutes in these areas.

This familiarity with metropolitan work means offers of work in other remote locations are met with scepticism.

The rates are no higher than those offered for city assignments, the travelling distances greater and the assignment would seem to be the excitement of working in a big city environment.

Contract staff seem to be the misgivings of permanent staff about a move to sticks.

Contractors who feel the rural assignment is a step of a retrograde step are ignoring flexibility, which is perhaps the most important advantage of contract working.

Permanent staff need to weigh up the pros and cons: such a move as they will probably be changing house, school and social environment.

The short-term nature of contract assignment means that the contractor need not consider such a move as final but can evaluate the assignment knowing that he will be free to reassess the situation after a certain period.

Quiz

In advising contractors consider assignments in the like the South, the following should be taken account:

Firstly, evaluate the assignment, the location, possible routes to work, etc.

If the assignment means staying away from home, ask the agency to put out approximate costs of living and rentable.

Thirdly, use the interview to find out and confirm details concerning day-to-day working on site. Customers are often quite willing to modify working hours to suit those people who will be working away from home during the week.

Several contract staff I have spoken to said they enjoyed the responsibility and the freedom to make their own decisions made on them as computer professionals.

To summarise, developing the South as a new market, a tendency for large installations to move away from city centres, the wide variety of large and small installations in the area will mean more opportunities for the contract staff in the future.

CONTRACTS..

Contracts

Ring Knutsford (0565) 52577/54364

Ask for Vic Groves or Brian Broderick, or send coupon—we will contact you

A FREE AND COMPREHENSIVE GUIDE FOR FIRST TIMERS AVAILABLE ALSO

Name _____
Address _____
Tel/Home _____ Tel/Work _____
Post to: FREEPOST VNG Professional Services Ltd
Knutsford Cheshire WA16 7BR

Victoria Appointments Limited

We are always looking for Professional Freelance Programmers, Analyst/Programmers and Systems Analysts with at least 4 years sound experience. For assignments in the North West of England and Holland. We can offer you:

- Competitive Rates.
- Continuity of high quality assignments.
- Professional Guidance in all financial matters if required.
- And of course all the other facilities you can expect from an established organisation with a high reputation.

For further information and details, send your CV FREEPOST or telephone Phil Waller or Janet Higson now...

061-236 7319 - 061-236 7417.

Victoria Appointments Limited

FREEPOST, Manchester M28BD.

Home No. 061-440 8134.

(24 hour answering service 061-236 7319).

CURRENT AND FORTHCOMING CONTRACTS

CICS COBOL PROGRAMMER	W. LONDON
CICS PL1 PROGRAMMER	KENT
PL1 PROGRAMMER	KENT
SYSTEMS ANALYST	KENT
FORTRAN PROGRAMMER	C. LONDON
CORAL OR MACRO 11 PROGRAMMER	KENT
O.S. SYSGENS PROGRAMMER	HOLLAND
DOS COBOL PROGRAMMER	C. LONDON
CICS DL1 PROGRAMMER	C. LONDON
OS COBOL PROGRAMMER	CITY

PLEASE CONTACT DAPHNE JONES

FORCE 8
Computer services
8 Mint Walk, Croydon. 01-680 3761

PLESSEY CHAIR AND HEAD OF DEPARTMENT OF COMPUTING

£13,995 - £15,432

Applicants with high academic qualifications and appropriate industrial or professional experience are invited to apply for the first appointment to this newly created Plessey Chair in Computing.

The ability to develop research and consultancy programmes in accordance with Polytechnic policy is of crucial importance. Above all the head should be able to provide academic leadership to a group of well-qualified staff who have been used to a vigorous programme of course and curriculum development in computing and microprocessor applications.

Further details and form of application from the Assistant Director (Administration), Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Application forms to be returned as soon as possible.

TRENT
POLYTECHNIC
NOTTINGHAM

Head of Computer Services

PO.2 (I-V) £10,272-£11,361
(From 1.4.81 £10,455-£11,552)

To be responsible for the management of the Computer Services Section in one of the largest Borough Councils. The section consists of 23 staff at the present time, and operates an ICL System 4/60 computer with magnetic tape, disc and VDU's. Input is prepared on a 7-keyed Rediffon Seesack system.

The Council is shortly to select a replacement computer which will provide greater opportunities for on-line computing facilities to many departments. You will be particularly involved in this process and subsequent plans for installation and implementation. A wide range of systems is already in operation and once the new computer is installed it is planned to develop a range of new systems as well as transfer of existing systems.

You should be experienced in the workings of a computer system, have experience of controlling and motivating staff, be able to communicate effectively with users at all levels and be capable of drawing up development plans and seeing them through to successful completion. Experience of working in Local Government would be an advantage and the council will show preference to a candidate offering any relevant qualifications.

Benefits of working with the Authority include:

- * Salary within the above range, with starting salary according to experience and qualifications and subsequent progression by annual increments to the top of the range.
- * Flexible working hours.
- * Contributory pension scheme.
- * Offices located in the centre of Brighton, on the Sussex coast.
- * Temporary housing accommodation may be available.
- * Generous relocation assistance includes full removal expenses, and up to £1,000 resettlement allowances.
- * National conditions of service.

Applications, giving full details of age, education and experience, together with the names of two referees, should be sent by 8th February, 1981 to the Borough Treasurer, PO Box 4, Town Hall, Brighton BN1 1JR.

If you wish to obtain further details of the post, please ring Mr F. B. Porter, Brighton (0273) 28801 Ext 438.

BOROUGH OF BRIGHTON

PUT YOUR FUTURE IN THE LAP OF THE GODS!

ZEUS-HERMES RECRUITMENT LTD., provides a specialist recruitment service, finding suitable appointments for Data Processing Professionals for either permanent or contract positions.

Complete and return the coupon below, and...

-Don't just trust to luck!

Name _____
Address _____
Home Tel: _____ Work Tel: _____
Present salary: _____ Salary sought _____
Present position: _____
Position sought: _____
Years in DP: _____
Main Machine (s): _____ Main Language (s): _____



ZEUS-HERMES RECRUITMENT

TELEPHONE: 01 388 6011 (24 HOUR SERVICE) OR WRITE: (NO STAMP REQUIRED) ZEUS-HERMES RECRUITMENT LTD FREEPOST 20 LONDON W1E 4YZ

TSB COMPUTER CENTRE at Crawley in Sussex

We look after the needs of 240 Trustee Savings Bank branches through a major on-line VDU network controlled from our purpose-built Centre. We are a team of true enthusiasts dedicated to serving the increasingly sophisticated banking requirements of the TSB's millions of customers. Staff turnover is low, so there are not many opportunities to join our team.

COMMUNICATIONS CONTROLLER

£6,576 - £8,645

We have recently installed a Burroughs B6800 Dual Processing System servicing an on-line network of more than 800 visual display terminals throughout the offices of the TSB South East and TSB of the Channel Islands.

A vacancy exists for an experienced Communications Controller who will be fully responsible for the efficient operation of the network. The successful applicant - who will report to the Chief Operator - will have an Assistant Communications Controller and a Technical Assistant to aid him/her in the day-to-day running of the network, together with sophisticated diagnostic and monitoring equipment.

Salary £6,576 to £8,645, dependent on experience.

House Mortgage Subsidy is also payable in approved cases.

Write to: Manager, Computer Division
TSB South East - Computer Centre
Russell Way, Three Bridges, Crawley, West Sussex BN11 1AU

Recruitment **LOGISTIX** In Informatics

Microprocessor Engineers

Switzerland: Salaries to SwF. 62,000

Our client's software development Headquarters are situated near Zurich. We have an exclusive assignment to recruit several Software Development Engineers to join the Company's permanent staff. A Bachelor or Masters Degree in Electronics, Electrical Engineering or Computer Sciences is mandatory. All candidates must offer a minimum of four years' involvement in microprocessor software development. There is a preference for those fully familiar with Motorola 6800 hardware and software or as a secondary consideration on Intel 8085/86.

UNIVERSITY OF SOUTHAMPTON COMPUTING SERVICE

OPERATIONS CONTROLLER

Applications are invited for the post of Operations Controller for the University's Computing Service. The Service provides comprehensive on-line and local batch facilities for all Faculties of the University, and has links to London and Manchester. The main central equipment consists of a dual-processor ICL 2870, a Honeywell 6080 and a PDP 11/45.

The Operations Controller will be responsible for the efficient day-to-day provision of all the real-time and batch services. Additional duties will include the selection and training of operations and data control staff, planning the physical development of the installation and its communications network, advising on the acquisition of computing, communications and peripheral equipment and maintaining close liaison with suppliers.

Applicants must have appropriate experience with large computers. The ability to motivate staff and to speak and write lucidly is also essential.

The post is a permanent one, with its salary related to the academic scales. Starting salary will be within the range £5006-£5995 p.a. (subject to review).

Applications (2 copies) giving date of birth, full curriculum vitae and the names and addresses of two referees should be sent to Mrs. P. Vaughan-Smith, Staffing Department, The University, Southampton, SO9 5NH, as soon as possible. Please quote reference 1177/A/CV.

Customer Support

W. Home Counties: Salary to £10K

Due to the steady expansion of its client base, a leading multi-computer manufacturer has recently opened a customer support centre to service the Western Home Counties. Consequently, additional Programmers and Analysts/Programmers are urgently required to join their existing teams. At least two years' commercial programming experience combined with

the ability to liaise with clients is essential as is fluency in either Cobol or Basic. Our clients have a stated preference for candidates with exposure to either DEC's PDP range or Syntex's 8/6000 Series equipment. However, applicants with experience on any leading commercially orientated mini-computer should not be deterred from applying.

Ref. L/3/B

Management Consultants

London: Salary to £15K

Our client, based in Central London, has an enviable reputation as one of the U.K.'s most prestigious Management Consultants. An expanding client base in S.E. England has produced vacancies for additional Consultants to join existing project teams. All candidates must be self-confident, presentable and have good personal communication skills. It is anticipated that you will be a graduate aged 28 to 34 with the ability to appreciate pro-

blems from a business, technical and political point-of-view. Particular requirements are for Information Consultants who have been involved in the selection and use of PABX equipment or who have had exposure to electronic mailing systems. Consultants with a knowledge of structured design techniques, data management or networking in a commercial data processing environment are also invited to apply.

Ref. L/3/C

IBM Programmers

Holland: Salary to £18K

A leading multi-national with Data Centres throughout the world is seeking Applications and Systems Programmers for its IBM 3081 installation in Holland. Applications Programmers should have a minimum of 12 months' experience in COBOL or PL/I on any large IBM mainframe computer. Those who have participated in the program development of an on-line system or who

have written and developed programs under IMS will be particularly welcome. Systems Programmers must have recent experience in the implementation of SYSGEN, releases and enhancements and should be familiar with MVS, TSO, ACF/VTAM or IJVS/VS. Additional knowledge of PL/I is advantageous.

Ref. L/3/D

Coral 66 Programmers

Stn. H. Counties: Salary to £10K

A leading Systems House and Consultancy based South Thames and within 40 minutes drive of Central London and The City has requested LOGISTIX to identify and recruit several CORAL 66 Programmers. You will join a team already engaged in the design, development and implementation of a new military and defence system.

It is particularly advantageous to offer previous programming design and development experience in the areas of radar, tracking and surveillance. Particular hard-ware experience is not important but a knowledge of PDP-11 hardware and systems software will certainly reflect in the salary offered.

Ref. L/3/E

Oil & Seismology

Central London: Salary to £13K

A well-respected Company participating in the development of advanced oil and seismic applications is seeking additional project team members for its Central London Operations. Applications Programmers should offer commercial experience in a TE monitor, DBMS or distributed processing environment. Programmers should offer a minimum of one year's FORTRAN experience while Systems Analysts and Project Leaders should have been involved in

the inception and live running of at least one major on-line system. Additionally, candidates will be considered to have relevant skills in the areas of forecasting/budgetary applications, refinery and production data reporting, environmental/seismic data analysis and personnel movement systems. Salaries and fringe benefits are commensurate with experience and will be discussed with successful candidates.

Ref. L/3/F

Real-Time Applications

German Speaking: Salary to Dm. 70K

A well-established Systems House with a number of projects engaged in the development of software both in-house and on contract has an urgent requirement for additional Systems Analysts, Programmers and Project Leaders. All applicants should have the ability to work in a team and be able to communicate in German, although total fluency is not essential.

At least two years' experience of languages such as COBOL, Algol or derivative languages is a minimum requirement for all positions. Candidates for the senior vacancies will be expected to possess decision-making and management skills and a depth knowledge of Systems Design Techniques.

Ref. L/3/G

Logistix, 10 Grenville Place London SW7 4BW

01-373 3063

LOGISTIX

Ref: 28800

WALSALL METROPOLITAN BOROUGH Education Committee

Supply of Microprocessors

Tenders are invited for the supply of microprocessors and allied equipment for use in schools.

A form of tender and a document specifying the types of equipment involved is obtainable from R. D. Wilson, Director of Education, Civic Centre, Darwell Street, Walsall, WS1 1DQ, and tenders must be returned to the Chief Executive and Town Clerk not later than 12 noon on Friday, January 30, 1981.

URGENT!

* Project Analysts Process Control

* Instructors (various applied)

* Manual Writers (H/W and S/W)

Please contact in the first instance:

Dorcas Wilkinson on 01-362 8002 or evenings between 6 and 8 pm on 01-362 4422.

HOWARD

I.B.M. DATA DICTIONARY

3rd edn contract

Excellent rate

Picks

Telephone: 01-439 8481

Ref. C.M.

Targa SYSTEMS AND PROGRAMMING

CITY

The London Branch of a major European bank is about to commence development of its banking systems and requires a SYSTEMS ANALYST to complement the existing team. The ideal applicant will have at least one year's experience as an Analyst and should have been involved in a project involving EXCHANGE and REAL TIME systems forms part of the background. Excellent banking fringe benefits apply. Ref. R.3177.

CITY

Targa Computer Services which was established in 1978 is part of a group of companies serving the computer industry. We seek a CONSULTANT to expand activities within the more SENIOR range of applicants. Ideal candidates will be over 25 with experience of SYSTEMS ANALYSIS or PROGRAMMING and have the ability to assess people and communicate effectively at all levels, advising clients of salary levels, advertising and job specification. Generous basic salary, incentives and benefits are offered. Ref. R.3187.

ESSEX (S.E.)

A leading company in the leisure industry seeks a Chief Programmer to lead an existing team. Ideal candidates will be familiar with structured programming techniques and have the management skills to recruit, train and develop staff, together with the ability to assist at the systems design stage. A COBOL background is essential and exposure to recent IBM hardware together with CICS a definite advantage. Benefits include relocation, bonus and flexitime. Ref. R.3184.

CITY

A leading City-based International Company seeks COBOL programmers with upwards of two years' experience. Very bright young people with UNIVAC or IBM experience, together with an exposure to on-line programme development, DATABASE and sales order processing would be particularly welcome to apply. This is a development opportunity in an expanding company offering excellent fringe benefits. Ref. R.3182.

W. END

A number of staff are required by this internationally known company based in the West End. Very well qualified TRAINEES will be considered but a good numerate degree is essential and a knowledge of OPERATIONS RESEARCH and IBM equipment helpful. The programming language is FORTRAN. Ref. R.3188.

CITY

We require programmers and SENIOR programmers for leading city-based European banks. AIMS experience is essential and demonstrable supervisory or management abilities will be required by the senior people. The usual fringe benefits will apply. Ref. R.3178/8.

ESSEX

Several analyst programmers are required to work in a recently installed UNIVAC 1100/81 installation. A COBOL background together with expertise in FILE-TAB, UNITED and applications work on FINANCIAL or MANUFACTURING systems is required. There is also a requirement for an ANALYST with considerable DATABASE experience. Ref. R.3174/8.

OPERATIONS

OPERATORS (Various)

Vacancies exist for all levels of Operator for a Company based South of London who use IBM hardware utilizing OS/VS1 and MVS. The current configuration comprises 370/158 & 3081. A standard 3-shift system is in operation. Successful applicants can expect a very good salary and many chances of career progression. Ref. 3182.

PDP11/70 OPERATORS

Our client, a large well-known concern in S. London is currently looking for an experienced OPERATOR or SENIOR OPERATOR with at least 2 years plus current experience using a PDP11/70 running under RSX11. You should be of smart appearance, able to demonstrate your supervisory capabilities/skills and be able to motivate staff under you. Benefits for this position are superb, namely, sub-mortgage, NCP, BUPA, I/A, 5TL and LV. Ref: 3188.

ICL SYSTEM 4 OPERATOR

Based in S. LONDON our client is looking for an experienced SYSTEM 4 operator, if you have between 1-4 years experience on SYS4 and would like to progress our client would like to hear from you. There are possibilities in the future of moving onto their larger 2800 systems. The company also offer a first-class benefits package. Ref. 2268.

IBM OS/DOS OPERATORS

Vacancies exist for various levels of computer operators who have worked on IBM 380/370 range computers. A knowledge of either OS or DOS Operating Systems is preferred, however, training will be given in all aspects of operations and technical areas. Excellent career prospects for people with the right attitude and temperament together with man-management abilities. Ref: GEN.051.

HONEYWELL/GCOS OPERATOR

This Essex-based company are looking for an experienced GCOS operator with at least 1 year's good GCOS exp., including a good knowledge of JCL techniques. If you want to work in a secure and expanding company with good prospects for moving towards programming or tech. support then please for fuller details. Ref: 2849.

Targa are always pleased to hear from experienced Systems, Programming or Operations staff. If your career needs a boost, contact the office for an informal discussion with one of our consultants.

TARGA COMPUTER SERVICES

46/47 LONDON WALL
LONDON EC2M 5TE 01-638 6381

Senior Programmers

Minimum 2 years' experience in programming on IBM mainframes using PL1, TSO, IMS DB/DC and/or DEC minicomputers using RSX RTL/2.

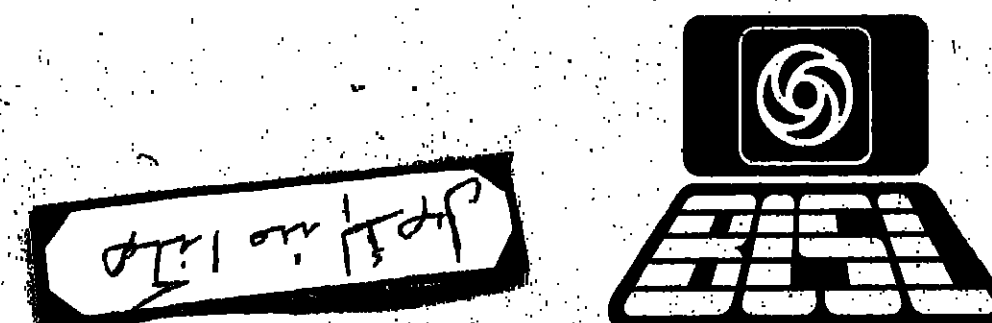
Systems Analysts

Minimum 2 years' in systems with a minimum of 1 year in systems analysis and experience of IBM mainframes using PL1 and IMS DB/DC.

All posts are based in new headquarters at Redditch, ruraly situated between Birmingham and the Cotswolds. Salaries in a range £8,500 - £7,500, generous relocation package where necessary, car purchase plan.

For full details either ring Sally Lenton on Redditch (0527) 64274 ext 330 or write to Lyn Morgan, BL Systems Ltd., Grosvenor House, Prospect Hill, Redditch, Wores. Men and women equally welcome.

Need we say more?



OVERSEAS OPPORTUNITY

Systems Analyst Programmer

£16,000 NEGOTIABLE
Tax Free plus many additional
benefits

FREE BOARD AND ACCOMMODATION

Preferably with experience of CDC 3700/Assembler and PDP 1135/Fortran. - RSTX/11M and experience of process control applications relating to oil pipeline control systems. Ideally with electrical engineering background.

Initial contract 1 year. 15 days' paid home leave every 7 weeks.
Contact Maurice R. Hamill, Atlas Computer Consultants Limited, Bolton 241178 or write sending CV to Burlington Chambers, 88/90 Newport Street, Bolton BL1 1PB.

RELION (UK) LTD.

Assistant Planning Manager

Edinburgh

£7000

An expanding national company with overseas interests have a vacancy in their head office for the above important position.

Responsibility for the computerised strategic planning model in a commercial environment means that applicants should be fluent in FORTRAN programming, have systems analysis ability and be able to liaise with all levels of management.

This vital role is not merely theoretical but requires an

individual with a sense of business maturity, diplomacy and a relevant academic background. For the right candidate this is a challenging and important position within a dynamic and successful group that can lead to managerial status.

The company offers help with relocation where necessary, a non-contributory pension and life assurance scheme and other attractive benefits.

Please telephone David Hicks

Harrison Cowley Executive Selection

35 Queen Square, Bristol BS1 4LU. Tel. 0272 213151 (24 hr answering service)

HidroPetrol S.A. is looking for the following personnel for their seismic processing centre in Venezuela:

A) **SENIOR ANALYST** with geographical degree and minimum of 7 years' land processing experience.

B) **ANALYST** with a minimum of 4 years' experience in land processing.

C) **SEISMIC PROGRAMMER** with minimum of 3 years' experience in seismic programming.

HidroPetrol S.A. at present has a LITTON PRE/SEIS Computer installed. By early 1981 a new VAX R/780 computer system will be installed. Salaries are according to experience but will be in excess of £20,000 per annum.

A comprehensive health plan is available. A 1-year contract will be negotiated initially with a month's vacation at contract end. Relocation assistance will be provided. Reply with full resume and home telephone number to:

Martin Thornwood
SERVISIOS TECNOLÓGICOS HIDROPETROL S.A.
Apartado 88888
Caracas 104
Venezuela, Tel Caracas 722721/5

Distribution Sales Manager

UK and IRELAND Micro Computer Products

LOCATION LONDON

SUBSTANTIAL INCOME PACKAGE

HIGH GUARANTEE IN FIRST YEAR
PLUS COMPANY CAR



Specialist Computer Recruitment Ltd

London 01-435 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3761 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-840 7161/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

Our Client is one of the World's leading International mini and micro computer systems manufacturers who by incorporating the latest technology, their innovative products command the respect of all who follow them.

To further penetrate the new and lucrative MICRO PROCESSOR DISTRIBUTION MARKET, they wish to recruit a highly successful Senior Sales candidate to promote their micro products in this sector.

Educated to HNC in Electronics or equivalent, candidates will have a proven track record in micro computer systems sales, knowledge and understanding of the distribution market, backed by sound business acumen, leadership and a flair for 'start-up' situations. Aged between 30 and 35, responsibilities will include the setting up of this new division, along with establishing its business objectives and marketing strategy. The brief will include the requirement to recruit further sales personnel dependent upon your success where your man-management skills will be of paramount importance.

This is a key position with a truly dynamic Company. The opportunities are great and the personal potential obvious.

For an immediate and confidential interview where you will be supplied with full Company information, contact RICHARD CHAMPION on 01-935 0671 (24 hour answering service) or 0562 884166 (evenings and weekends).

Candidates are invited to submit curriculum vitae if preferred where confidentiality is guaranteed.



7 IBM Systems Programmers

London & Home Counties £8,000 to £11,000

I bet you never knew how popular you were! All you need to have is a technical IBM background with relevant IBM DOS/VSE or OS/VS1, VSE or MVS experience to command a very good salary. We now have vacancies in: E LONDON (1), HANTS (1), CROYDON (1), KENT (2), and the CITY (2). Remember that good applications programmers with the right interest in the systems side would be very welcome. Several companies offer excellent perks including relocation package, subsidised mortgage facilities, etc.

CW 3/1 Tricia

Systems Analyst

City

c£9,000

A major Telecommunications manufacturing and supply company using the very latest DEC & IBM installers has requirements for a DATABASE systems analyst with IBM CICS or similar experience. Here is the opportunity to join the market leaders and benefit not only from an excellent career structure but top perks that include flexitime, L.V.s, relocation assistance, etc.

CW 3/2 Tricia

Project Leaders & Consultants

C. London

£9,000 to £15,000

Now is the time to get in on the ground floor of a large government contract (based around ICL 2900) that will extend your experience and provide a worldwide step in your career development plans. As part of this International consultancy handling this contract you will be involved in a major project requiring the highest standards of professionalism. All those wanting more details please contact Michael.

CW 3/3

Analyst Programmers

Central London

£8,000-£11,000

A large international company in Central London requires Analyst Programmers with a minimum of two years' IBM COBOL CICS experience. A Hewlett-Packard background will also be considered for their on-line major application enhancement. This is an excellent firm with a first-rate career structure and perks that include flexitime, free lunches, non CPS and 4 weeks' holidays.

CW 3/4 Tricia

Cobol Programmers

Surrey

£8,000 +

A large well known Utility in N. Surrey requires COBOL programmers (any machine) with 18 months' experience. Here is a chance to gain really first-class training in the very latest while 16M computer techniques and improve your career structure no end. Benefits abound, including CPS, subs, canteen, bonus scheme and S&S club, etc.

CW 3/5 Tricia

We also have 40 other Analyst/Programmer vacancies

Salesmen Salesmen Salesmen

London & Home Counties

to £20,000 Q.E. + car

An established market leader wishes to expand his penetration of the mini/micro market by establishing Senior Salesmen to take charge of existing accounts whilst obtaining new business. A real chance to match your efforts with reward and managerial promotion after a reasonable period is well on the cards.

CW 3/6 Michael

Contract Programmer/Analysts

IBM	8100 3790 PROG.	SURREY	3 MTHS
IBM	COBOL 4341 DOS/VSE CICS	LONDON	3 MTHS +
IBM	SYS. 3 DOS/VSE COBOL RPOCI	LONDON	3 MTHS +
IBM	370 COBOL CICS VSAM DOS	LONDON	3 MTHS +
H.WELL	166 TDS IDS COBOL	HSHIRE	3 MTHS
T.I.L.	290 COBOL TUTOR	LONDON	3 MTHS +
ICL	2860 PLAN/COBOL DMB	LONDON	3 MTHS
MINIMICRO	SOFTWARE EXT.	AUSTRIA	1 YEAR
DIGITAL	TELEPHONE MESSAGE SWITCHING SWARE	FRANCE	18 MTHS

PHONE: IRENE FOR DETAILS

CW 3/7

ICL Operators

S.W. London

To £6,500

If you have 2 years' ICL 296 VMEB/DMB experience, then your services will be required by this company. There is a two-shift system only - days and evenings. Benefits include 4 weeks' holiday, C.P.S. and free meals.

CW 3/8 Simon

IBM Operator

Berkshire

To £6,000

A large company in S. Berks requires an operator with 1 1/2 years' minimum experience of IBM 3031 or 370 under DOS or MVS. There is a 3-shift system and perks include non-CPS, 4 weeks' holiday, 1 year, subs, rent, insurance scheme, sports & social club, staff discounts.

CW 3/9 Simon



Recruitment Consultants
Universal Computer Associates Limited
Data Express House,
Prospect Place, London W4 3BR
01-995 3883 (01-958 6136 Evenings)

UNIVERSITY OF SOUTHAMPTON

Microprocessor Service

Applications are invited for a new appointment in the Computing Service to initiate and develop a microprocessor and microcomputer development service to all Departments in the University. This service will, in particular, concentrate on Systems and Software aspects and will take place in close collaboration with the Department of Electronics to ensure a comprehensive service. Other related developments in the Computing Service include the introduction of a University wide digital communications system and the mechanisation of production processes.

The salary scale for the appointment will be within a range from £5805-£11575 p.a. (starting salary will depend on qualifications and experience). Applications with a curriculum vitae and the name and addresses of three referees should be sent to Mrs. P. Vaughan-Smith, Staffing Department, The University, Southampton, SO9 5NH, from whom further particulars may be obtained. Please quote ref: 1171/A/CW.

1171/A/CW

OXFORD POLYTECHNIC

Department of Mathematics
Statistics and Computing

TEMPORARY LECTURER in COMPUTER STUDIES

required for one term only from April 1981. The successful applicant will be primarily involved in teaching programming and related topics to first-year students on the Modular Course and HND/2 in Computer Studies.

Salary, according to qualifications and experience will be in the range £9012-£9702. Further particulars and application forms may be obtained from the Acting Head of Department of Mathematics, Statistics and Computing, Oxford Polytechnic, Oxford, OX3 0BP.

1171/A/CW

UNIVERSITY OF SOUTHAMPTON

PROGRAMMING STAFF

The University Computing Service is seeking additional programming staff to assist in the support and development of its Service. The Service provides extensive batch and interactive facilities based currently on three host computers - ICL 2960, ICL 2970 and Honeywell 6800 and a PDP 11/45, and uses facilities at London and Manchester Universities.

Applicants should possess a degree or equivalent, and have relevant experience in the design and development of user support techniques.

The appointment will be in the salary range £9,000 to £11,575 p.a. depending on qualifications and experience. Applications should be sent to Mrs. P. Vaughan-Smith, Staffing Department, The University, Southampton, SO9 5NH, from whom further particulars may be obtained. Please quote reference 1175/A/CW.

1175/A/CW

1175/A/CW

OVERSEAS VIA I.A.

SYSTEMS PROGRAMMER required to work on an IBM 4341 running under OS/VS1 using CICS, VSFA, VTAM etc. The work will involve general maintenance of the system, housekeeping and file maintenance. Knowledge of the Dutch language advantageous. Location: The Netherlands

ANALYST/PROGRAMMER required to program in ASSEMBLER on MINI hardware. Work involves the development of scientific X-ray application systems. Location: The Netherlands

SENIOR SYSTEMS ANALYST/PROGRAMMER required with a good knowledge of DL/I and COBOL. Hardware in use IBM 4341 running under DOS/VSE and CICS. Knowledge of the IBM package COPPLCS advantageous, not essential. Applications to be worked on include an on-line production/inventory control system and other materials management modules. Location: The Netherlands

MINI/MICRO specialists required to write USER REFERENCE MANUALS for a new range of MICRO's being developed. Location: Vienna

SYSTEMS SOFTWARE ENGINEER required with an in depth IBM UTILITIES knowledge to work on an IBM 4341 running under DOS/VSE using CICS, MVS, TSO, VTAM, MCP etc. Location: France, good knowledge of the French language essential

SENIOR COBOL PROGRAMMER with program design experience in business applications to work on a new dedicated machine. Small business computer experience essential. Location: The Netherlands

ANALYST PROGRAMMERS and TEAM LEADERS with excellent COBOL, are required to work on the conversion of a number of systems to IBM hardware. Other D.P. languages required are RPG II, FORTRAN and ASSEMBLER. Applications range over scientific, engineering and petro-chemical subjects. An in-depth knowledge of any of the following IBM UTILITIES will be advantageous: CMS, TSO, VSAM, VTAM and FOURMOST. Location: The Netherlands

ANALYST PROGRAMMERS with experience of REAL-TIME TELEPHONE SWITCHING software. Location: Paris

TECHNICAL AUTHORS/TRANSLATORS with a basic electronics knowledge and/or digital M.O.D. systems experience to write and translate documentation from French to English or German to English. Some wire-guided missile or optics experience preferable. Location: Paris

Outlined above is a selection of current requirements. Space and time make it impossible to list all the opportunities available. Therefore, if you would like to work overseas and for a highly-respected service company, please telephone or send your career resume to me because I may well already have an excellent opportunity to offer you.

PLEASE WRITE OR TELEPHONE NOW
Ann Arlidge, Marketing and Recruitment Director
Industrial Artists Limited, 21 Bancroft, Hitchin, Herts.
Tel: (0462) 57141 (Day) or (0462) 700701 (EvenWeekends)

IA is a registered Employment Business licensed by D of E.



FACILITIES MANAGEMENT BUSINESS SYSTEMS CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY
SOFTWARE PACKAGES COMPUTER SECURITY FACILITIES MANAGEMENT
CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY BUSINESS SYSTEMS SOFTWARE PACKAGES

HEXAGON PERMANENT RECRUITMENT DIVISION

REAL TIME SYSTEMS PROFESSIONALS

London + USA

Pounds Unlimited

- ★ To develop Communications System & Operating Systems
- ★ Technically competent
- ★ Preferably experience of PDPs or Micros
- ★ Excellent Company, perks and prospects

Ref: PJ 80206

RPGII ANALYST/ PROGRAMMER

London, Bank

c. £10K + Mortgage

- ★ Hopefully with Banking Systems experience
- ★ Preferably around 4 years, DP

Ref: PJ 80220

CHIEF TECHNICAL PROGRAMMER

Widely

c. £11K

- ★ Good IBM background
- ★ Probably will have CICS experience
- ★ To act as Internal Consultant to Project Teams
- ★ Multi National Co.

Ref: PJ 80202

SENIOR PROGRAMMER

Berks & Midsx.

Neg. to c. £10K

- ★ Good commercial experience
- ★ Preferably HP experience
- ★ Multi National Co's with nice people

Ref: PJ 80221

PROJECT MANAGER/ LEADER

Central London

to £12K + Perks

- ★ Budgetary responsibility for a segment of corporate development
- ★ Telecommunications, Message Switching, Word Processing, Personal Computing
- ★ Experience of Major Systems Development as an Analyst or Project Leader
- ★ Banking or financial experience useful, but not essential

Ref: PJ 80201

MVS SYSTEMS PROGRAMMER

Midsx.

To c. £13K + Perks

- ★ To quickly take over department
- ★ Must have MVS Sys. Gen. experience
- ★ Preferably with CICS/NGR/VTAM experience

Ref: PJ 80203

PROJECT LEADERS

TEAM LEADERS

to c. £14K

to c. £13K/2K

to c. £12K

IBM

Central London

★ Major development plans

★ Preferably PL1/Financial background, although good quality is the prime consideration

Ref: PJ 80218

COBOL PROGRAMMER INTNL. BANK

London

Totally Neg + Bank Perks

- ★ COBOL Programmers, circa 2 years, experience
- ★ To work on development of Banking Systems
- ★ Hopefully CICS experience, but not essential

Ref: PJ 80204

COBOL PROGRAMMERS

Sevenoaks

to £7250

- ★ To train in CICS/DLI
- ★ Circa 2 years, COBOL experience
- ★ Good opportunity for friendly person

Ref: PJ 80205

(1064)

TEL 01-439 3671

COMPUTER WEEKLY CLASSIFIED
DIRECT LINE 01-661 0121
the newspaper computer people rely on



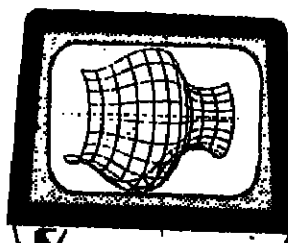
COMPUTERVISION EUROPE

"Computervision Europe, with operations in 10 European countries, is part of the Computervision Corporation, a major U.S. company, which is the world leader in the design and manufacture of Computer Graphics Turn Key Systems - one of the fastest growing high technology industries.

Computervision's Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) systems, and comprehensive support services, are helping customers to increase productivity worldwide.

We are a young, dynamic, highly profitable organisation currently embarked upon a major expansion programme to satisfy market demand."

Computervision Ltd.



Productivity... by Design

Field Service Engineers Application Engineers

up to £10,000 + profit share + 2-litre car

- * SOUTHERN ENGLAND * NORTH WEST
- * THE MIDLANDS * YORKSHIRE

FIELD SERVICE ENGINEERS up to £9,000

Working from home, the successful candidates will be involved with the installation, commissioning and on-going support activities to their respective customer base.

Candidates, with at least 2-3 years' field experience in the computer industry, should have experience of mini-computer systems and associated peripherals, ideally gained with a major manufacturer. Previous experience of CAD systems is not essential as product training will be provided at our Corporate Headquarters in the U.S.A.

Salaries will be as shown above plus profit sharing bonus, and the associated benefits package will include free BUPA and life assurance cover. Assistance will be given with relocation expenses, where appropriate.

We shall be commencing interviews in Regional Centres for these positions from 19th January 1981 so if you are interested please contact Mike Fuller, Customer Support Manager, or Bob Powell, Administration Manager, Computervision Limited, Penn Street Village, Amersham, Bucks. Tel: High Wycombe (0494) 714771, quoting Ref CV/12, Alternatively ring the 24 hour ASL Ansaphone Service on 01-629 1844 for an application form, quoting Ref CV/12.

These appointments are open to men and women.

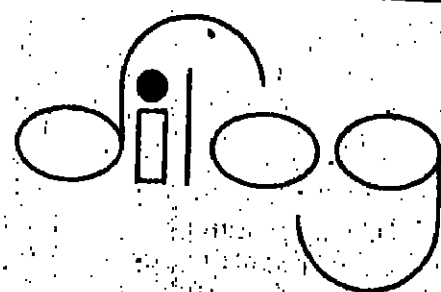
APPLICATION ENGINEERS up to £10,000

Working from a Regional Office, the successful candidates will provide some training and on-going application support services to both new and existing customers for our CAD/CAM systems.

Candidates should hold a relevant mechanical or electronic engineering qualification and preferably be familiar with the use of mini-computers. Experience of CAD/CAM, NC, PC/ES, and/or Piping/Civil Engineering would be a considerable advantage, although product familiarization will be provided.



CLIENT SUPPORT MANAGER



The Company:

Dilog provides professional services to both Clients and Contractors, with complete security to the highest ethical and technical standards.

The Job:

To maintain the high quality support to present Clients and to extend the Client base.

The Applicants:

A practising DP professional with at least seven years' experience, preferably in Banking/Finance.

The Rewards:

A realistic on-target earnings in excess of £16,000.

INTERVIEWS:

Telephone KEN SMITH on 01-555 7338 or write to: Dilog Limited, 61 Broadway, Stratford, London E15 4BQ.

professionals seeking professionals

BOLTON INSTITUTE OF TECHNOLOGY DEPARTMENT OF MATHEMATICS

LECTURER I OR LECTURER II IN MATHEMATICS OR COMPUTING

(depending on qualifications and experience)

Applications are invited from suitably qualified and experienced persons in one of the following areas:
Numerical Analysis, Business Data Processing

The person appointed will be expected to teach to Degree or Higher Diploma Level in their specialism. For an applicant offering Business Data Processing, relevant commercial experience would be an advantage. Previous teaching experience although desirable is not essential.

Salary Scales:
Lecturer I: £4,683-£9,085
Lecturer II: £3,012-£5,702

Positions on the salary scales will be according to qualifications and experience.
Application forms and further particulars may be obtained from the Principal, Bolton Institute of Technology, Deane Road, Bolton BL3 5AB to whom completed forms should be returned by January 30, 1981.

(4029)

FOR
CLASSIFIED
ADVERTISING
USE

DIRECT LINE
01-661 0121

SAUDI ARABIA PROGRAMMERS PROGRAMMER ANALYSTS BUSINESS ANALYSTS

IBM Experience
PL1, IMS or MARK IV

Are you interested in working in Saudi Arabia?

Salaries up to £25,000 per annum plus accommodation, living and travel expenses.

Phone Paul Swaysland
on 01-680 2400

MLA

Metra Lowndes-Ajax Limited
17 Lansdowne Road
Croydon, CRO 2BX

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

Tech Support Manager Based in Holland to US\$52,000

We have been retained to identify and select a European Technical Support Manager for a senior management role within our client's European marketing centre.

As a world market leader in the manufacture and supply of graphics terminals and systems, they have an enviable reputation for the quality of the products marketing and personnel.

Reporting to the European Marketing Manager, the successful candidate will be responsible - as Manager of a group of computer professionals - for further planning and development of a European technical support organisation, as well as providing central technical consultancy at a European level.

A technical background in software engineering both in mini computer and mainframe Fortran based applications is desirable coupled with strong management ability. A degree in E.E. or computer sciences is preferable.

A basic salary of up to 52,000 US Dollars is payable with the sort of benefits and relocation package one can expect from a major organisation.

For further information contact Tony McGrath on 01-637 9611.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT &
EXECUTIVE SELECTION

Sales Executives PERIPHERALS

EARNINGS PACKAGE
c.£18,000 p.a.

(open ended)
GUARANTEE NEGOTIABLE
plus Company Car

FULL TRAINING

two areas
NORTH OF ENGLAND
NORTH HOME COUNTIES



London 01-835 0821 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queenway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Pershore, Manchester M3 2JA
Bristol 011-222 840 73/71 Avenue Louise 327, Boite A, 1050 Bruxelles

We are a successful British manufacturer of a diverse range of computer systems addressing the scientific, technical and commercial sectors. As a progressive Company our products and support are respected, our marketing attitude is vigorous and our projected growth rate envied.

This continuing success can only be entrenched by further expanding our peripheral sales division where we are a distributor for a range of high quality tape units, printers, accessories and sub systems that have a reputation for reliability.

The Requirements:

A strong sales profile and a natural desire to succeed in the highly competitive 'new business' areas is a must, as is the ability to communicate (and that means listening). You may be selling computer peripherals or other high volume products where good initial qualification and fast 'closing' is the order of the day.

The Rewards:

Apart from above average earnings and high base salary, the career prospects are visibly good. Full training will be given, as will every opportunity to succeed within our fast moving Company.

For an immediate and confidential interview, contact the advising consultant Simon Lever on: 01-835 0671 (24 Hr. Answering Service) or: 021-420 1574 (Evenings and Weekends)

For the Northern position contact Paul Pearce on: 061-833 0427 (24 Hr. Answering Service) or: 021-308 4908 (Evenings and Weekends)

If you prefer please forward your Curriculum Vitae. Confidentiality is guaranteed.

642

PROGRAMMERS IF YOU KNOW RPG, OR WOULD LIKE TO LEARN IT you'll be speaking our language

RPG is the language we use on our new IBM equipment, here in North Acton, for handling our management information systems which embrace production, finance and sales. To ensure and maintain high levels of efficiency we're now undertaking a programme of systems evaluation and development.

And that's where you come in. We need you to join our small, highly professional management services team and work closely with our Business Analysts.

It's an interesting time to be joining the company which is a top name in metering, measurement, instrumentation and control systems. It's also an ideal opportunity to develop your experience in a highly innovative and progressive production environment.

We'd like you to have at least 18 months' commercial systems programming experience. Ideally an IBM 3,32 or 34 equipment. A knowledge of MAPICS program package would be useful and while experience of

RPG would be desirable, we can train you if necessary, so it's a good way of learning a new language.

We're looking for initiative, good communication skills, an ability to work with the minimum of supervision and some administrative experience.

The job is, of course, open to both men and women, and we are offering a salary of around £6,000 p.a. plus 23 days' holiday, subsidised staff restaurant, contributory pension scheme with free life assurance.

Write with details of your experience to Diana Palmer at Landis & Gyr Ltd., Victoria Road, North Acton, London W3 6XS. Telephone 01-992 5311. Ext. 3226.

LANDIS & GYR

precisely what good jobs should be



UMRCC

UNIVERSITY OF MANCHESTER
REGIONAL COMPUTER CENTRE

Director: Professor G. Black

UMRCC is a national centre providing a general service to over thirty universities in the United Kingdom. This is currently based on two Control Data 7600 computers each front ended by an ICL 1800. A CDC CYBER 170/720, accessed by over a hundred terminals, provides an interactive computing service to Manchester users.

PROGRAMMER

Salary scale: £4795 to £8095 or £5055 to £9595 p.a., depending upon age and experience to develop and support local and wide area networking systems. Real-time systems or data communications experience required. Ref. 262/80.

MACHINE ROOM CONTROLLER

Salary scale: £4795 to £8095 p.a., depending upon age and experience, required for the day-to-day running of the central computer systems and control of associated operating staff. Ref. 255/80.

ASSISTANT COMPUTER OFFICER

Salary scale: £4795 to £6985 p.a., depending upon age and experience, required to work with a section which produces the manuals describing the computer services offered to our 10,000 users. Ref. 256/80.

If you would enjoy the challenge of working in a stimulating environment with the prospects of a rewarding career which offers a good pension scheme and generous holiday entitlement, send for further information and an application form (returnable by 5th February, 1981) to the Registrar, University of Manchester, Oxford Road, Manchester M13 9PL, quoting the appropriate reference.

URGENTLY WANTED: EXPERIENCED INFORMATICS SYSTEMS SW PROGRAMMER

required; minimum 3 years of experience in compiler design and construction, Assembler and Pascal, creative and efficient practitioner. Experience in DEC PDP11 desired but not absolutely necessary. Long-time job with top remuneration. Apply to ALKON AG ZURICH, Flurstasse 93, CH - 8047 Zurich/Schweiz. Tel. 01 54 52 54, ask for Mr. Bachmann.

OPPORTUNITY

Talented expert British team of real-time Data Switching hardware/software design specialists shortly available for challenging (and well paid) International assignments, collectively or individually. Agencies may apply.

For details apply to CW Box 1124

(4081)

CONTRACT or PERMANENT
HEXAGON
computer services
Hexagon House 145 Wardour Street London W1V 3TB

CONTRACTS
IBM IMS COBOL PROGS
ADF AN ADVANTAGE NORTH WEST
IBM CICS DL1 COBOL, NORTH EAST
Victoria Apartments
24 Mowley Street Manchester 2
Phone 061-238 7878 or 7477
061-440 8154 (Home)

UK Sales Manager

Computer GRAPHICS

£25k+

NEGOTIABLE GUARANTEE + CAR

SOUTH OF ENGLAND

Our Client is a respected and well established Manufacturer of graphics systems and peripherals. They are acknowledged as a leader in their field and have an impressive user base spanning many sectors of industry and science. Encouraged by a strong financial position, excellent products and committed Management their projected growth is impressive.

In order to capitalise upon their continuing success, SCR have been asked to identify an experienced Sales Manager, preferably within the graphics industry. Candidates should have a proven track record of success to date and must have the ability to not only motivate the growing sales force, but be willing to involve themselves in sales and man-management. Our Client will be looking for a degree of commitment, enthusiasm and a genuine desire to grow with the Company. In return they offer high earnings and the chance to work for a dynamic Organisation with genuine career prospects in the United Kingdom and Europe.

For an immediate and confidential interview contact, SIMON LEVER ON 01-935 0871 (24 hour answering service) OR 021-420 1574 (evenings and weekends). If it is preferred please send Curriculum Vitae which will be treated in total confidence.

London 01-935 0871 3 Mandeville Place, Wigmore Street, London W1M 5LD
Birmingham 021-236 3761 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-933 0927 Blackfriars House, The Paragon, Manchester M3 2JA
Brussels 010 322 840 7151 71 Avenue Louise 327, Route 4, 1050 Bruxelles

Specialist Computer Recruitment Ltd

01-935 0871

Some companies offer variety, excitement and involvement. Others offer security, a realistic salary and good career progression.

TEAM LEADERS

£8,000-£9,000+car+benefits

Systems Analysis

Responsibilities will include the preparation of business proposals, systems design and implementation.

Programming

To estimate and control the programming element of projects by leading a small team of Programmers. Assisting with the solution of design problems; close liaison with the Systems Analysis Team Leaders.

Technical Support

Responsibilities include technical systems design, hardware/software evaluation and development of technical software. Will undertake special assignments of a highly technical nature.

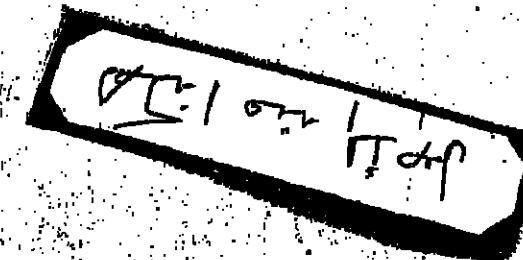
Currently there are approximately 50 projects under development including a major finance system using on line IMS and ADF facilities, a real time vehicle control system based on DEC 11/70 equipment and a private Viewdata system for the BL Cars UK dealer network.

Candidates must have proven ability in leading small teams and will need at least 3 years' IBM, PLI, TSO, IMS DB/DC mainframe experience or PDP 11, RSX RT1/2 minicomputer experience.

Salaries in a range £8,000-£9,000 plus car, generous relocation package where necessary. All the posts are based at our new headquarters in Redditch, ruraly situated between Birmingham and the Cotswolds.

For full details of any of the above posts ring Sally Lenton on Redditch (0527) 64274 ext. 330 or write to Lyn Morgan, BL Systems Ltd, Grosvenor House, Prospect Hill, Redditch, Worcs. Men and women equally welcome.

One company offers both.



ANALYST/ PROGRAMMER

Braun Ireland Limited, an expanding constituent of the Gillette Company, employs in excess of 800 people in the manufacture of electronic products in the home appliance field.

The plant is located at Carlow, one hour's drive from Dublin.

The company currently operates an advanced IBM/34 installation of the maximum configuration available. 22 workstations, Mapics manufacturing modules, full suite of on-line accounting modules, IBM 6230 time entry system and a microprocessor-based production monitoring system.

Candidates should have several years' RPG II experience, preferably on IBM/34. Knowledge of Mapics manufacturing modules would be a distinct advantage.

Salary will not be a limiting factor. An attractive fringe benefit package and relocation allowances, if applicable, will be paid.

Candidates should send comprehensive personal, career and salary details to:

The Personnel Manager
BRAUN IRELAND LIMITED
Dublin Road
Carlow

UNIVERSITY OF GLASGOW

Administrative Data
Processing Group

DATA PROCESSING CONTROLLER

Applications are invited from graduates or other suitably qualified persons for the post of DATA PROCESSING CONTROLLER responsible for the maintenance of student records for the University's Records Office, Pro House experience of working with computers would be an advantage, but is not essential. This appointment will be made on the national study scale for other related staff in the range £5505-£8895 (under review).

Further particulars may be obtained from the Secretary of the University Court (Room 1.16) University of Glasgow, Glasgow G12 8QQ, with reference to the advertisement, giving the names and addresses of three referees, should be forwarded on or before January 20, 1981.

In reply, please quote Ref. No. 4738/1.

EUROPEAN SERVICE

CADO Systems are innovators in small business systems and one of America's fastest growing companies. An opportunity exists for a dynamic Service Engineer to operate out of their European headquarters in Monte Carlo. The successful applicant will be expected to travel as required to service a network of systems throughout Europe and to assist in providing technical support to agents throughout Europe. Excellent career potential. Existing mini-computer and associated peripherals. Essential: experience in a support role and knowledge of languages would be helpful.

Please apply with C.V. to:

D. M. Lloyd
CADO SYSTEMS INTERNATIONAL
L'Estoril
31 Avenue Princess Grace
Monte Carlo PTE Monaco
Telephone: (France) (93) 30 44 28

CADO SYSTEMS INTERNATIONAL

Computer Graduate for Direct Marketing

Christian Brann Limited are European leaders in direct mail techniques. Our business is expanding, particularly in the exciting and dynamic area of computerized direct mail. We handle lists for clients, managing them, updating them, and using them to produce highly creative direct mail shots that are personalized to millions of people.

The computer department also handles the fulfilment of orders for book clubs and other mail order enterprises. There is also a list research unit, devoted to finding, acquiring, and breaking lists of millions of individuals.

An opportunity exists now for a computer graduate to join this rapidly expanding team as Special Projects Officer, reporting directly to the Computer Services Director. We currently need a number of new initiatives in the use and application of computers in direct mail, and the role of the Special Projects Officer will be to develop these, produce plans, and supervise the implementation of each plan.

The successful applicant will have the potential to become a manager within any one of our major areas of computer-based activity, at the head of a skilled team, and with full profit responsibility.

Applicants should send their curriculum vitae, detailing the subjects covered at graduate level, to the Computer Services Director, Christian Brann Limited, Phoenix Way, Clarendon, Gloucester, GL7 1RY.

CB

Contact
Xenia White

market place

FOR SALE

For Advertising Rates
PHONE: 01-661 3500 ext. 3571

SK
Computer Systems Limited

DEC SYSTEMS FAST!

YORK HOUSE, STEVENAGE ROAD
HITCHIN, HERTFORDSHIRE, SG4 9DY

- PDP® BASED COMPUTER SYSTEMS
- FULL RANGE OF SOFTWARE
- PER CALL OR CONTRACT MAINTENANCE AVAILABLE
- WIDE RANGE OF DEC® COMPATIBLES
- TELEPHONE: 0462 31116
TELEX: 825647

systems and compatibles in stock

- * PDP11/03 @ TO VAX 11/780 @
- * TOTAL DEC @ OR
- * COMPATIBLES
- * APPLICATION SOFTWARE

FAST DEC!

FROM

Systek
HR House, High Road,
North Finchley, London N12 0AZ
Tel: 01-349 2911 Telex: 28227

BUY SELL TRADE DEC PDP11

For new / used Processors, Peripherals, Modules or complete systems
Call Peter Stock or Peter Hufton 0802-861774
Dextrado Ltd, 11 Musters Road, West Bridgford
Nottingham.
Telex 377878 VIDEUR.

The Hospitals For Sick Children &
The National Hospitals For Nervous Diseases
London

A TURN-KEY COMPUTER-BASED PATIENT ADMINISTRATION SYSTEM

is required to handle Master Index, Out-Patient Appointments, In-Patients, Waiting List and Diagnostic/Disease Index applications at the two hospital groups.

The system should operate on-line and is required for installation by December, 1981.

Detailed Operational Requirements available from:

Management Services Officer
LPTHMSU
6 Queen Square
London WC1N 3AR

FOR SALE ICL 1904S Plus Peripherals and Communications Equipment

Available approx. JUNE 1981
For further details ring:

JUDY HOBBS
Gloucester (0452) 21444, Ext. 520
OR
Write - Computer Services Manager
Gloucestershire County Council Computer Section
Quayside Wing, Shire Hall, Gloucester

LA34 DECWRITER IV

Surplus to requirements.
New condition.
£450 for quick sale.

Ring Mr. Dunkold
Tel. 01-581 2067

FOR SALE

L15 Burroughs Double Density 2-3
Millibyte disk cartridges, disk cartridge
cleaner, 30 bottles cleaning fluid and
10 boxes pads.
Telephone Dublin 771801, ext. 122
office hours or telex 28141 for details.
Prices negotiable.

WEBSTER D/P SERVICES LTD.

NEW/USED DP EQUIPMENT
BUY OR SELL THROUGH

NEW DE LUXE 80 COLUMN
HAND PUNCHES (EX-STOCK)



WDP

WDP

01-464 9011

IBM 129,029 PRINTING CARD PUNCHES

SORTER · REPRODUCERS · INTERPRETERS
* EX STOCK * NEW / FULLY REBUILT
* FULL WARRANTY * VARIOUS CODE OPTIONS
COL COMMERCIAL DATA LTD.
Downham Road, Ramsden Heath, Billerica, Essex
TEL. BASILDON (0268) 710292

FOR SALE

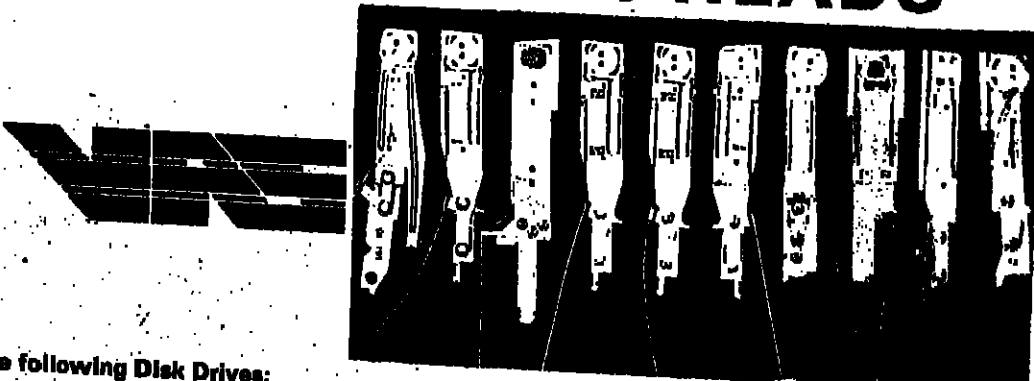
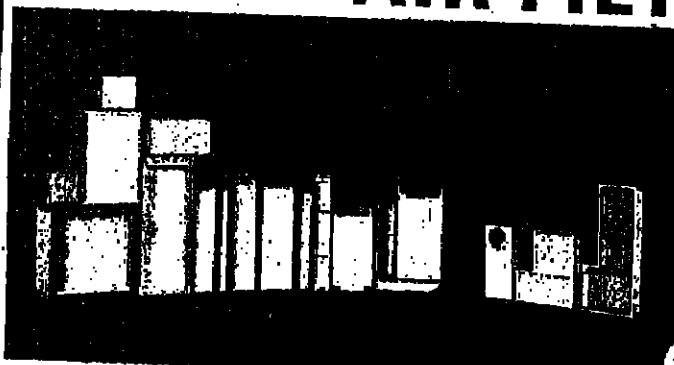
Olivetti A5 Accounting
Machine. Complete with Sales
Ledger and Invoicing pro-
grammes, £2,000.

Tel: Mr. G. Brooks
on 051-489 8424

NEW DEC/ USED DEC

D.P. CONSULTANTS
LTD.
01-448 3812
01-441 0793

AIR FILTERS & MAGNETIC HEADS



Magnetic Heads and Air Filters available on stock for the following Disk Drives:

CDC, AMPEX, DATA GENERAL, DRI, DIABLO, CALCOMP, IBM, PERTEC, WANGCO, MEMOREX, IOMEC, DEC, ISS, BASF, ETC.

VAS COMPUTER PARTS AND ACCESSORIES LIMITED, TOWER HOUSE, COLLEGE ROAD, BROMLEY, KENT, ENGLAND. TELEPHONE: 01-484 5895. Telex: 888559. CALL US FOR FURTHER INFORMATION AND BROCHURES

MAGNETIC TAPE TRANSLATIONS & CONVERSIONS

Overnight Turnaround
Specialist in:
STOCKS COMPUTER SERVICES
58 Copthorne Road, Feltham, Midd.
Tel: 01-891 2211

Computers Bought and
Sold

E O B LIMITED
Tel: 0783-44777
Telex: 637789

DYSAN DISKETTES

LARGE QUANTITIES
FROM STOCK

HAL COMPUTERS
Exclusively DYSAN
Weybridge (0932) 48488

ATTENTION! ATTENTION! ATTENTION!

Do you have any unused or redundant computer equipment that you want to sell? If so, call me, Xenia White, to find out how easy it is to place an advertisement in the Market Place section of Computer Weekly and reach over 94,000 Computer People in this country.

My telephone number is
01-661 3500, Ext. 3571

DON'T DELAY—CALL TODAY!

MIDDLESEX MODERN OFFICE BUILDING

8,000 sq. ft. / 16,000 sq. ft.

Easy access to
Central London / Heathrow.
Immediate occupation

Box No: 1118

SOFTWARE

DEC PDP11 RSTS/E RSX RTI

OMSI PASCAL: the fast, efficient compiler for PDP11 is now available from RTS.
With full documentation, support utilities, libraries and commercial application packages, OMSI PASCAL is the effective alternative from £1,225.

Training courses: monthly from February.
For more information call Steve Collins:
Real Time Products
1 Paul Street
London EC2A 4JJ
Telephone: 01-388 0687

FOR SALE ICL ME29 - BIRMINGHAM AREA

Owing to reorganisation, the following equipment, not used, is available for immediate private sale. ICL will guarantee maintenance for the normal 5-year period.

- 1 x ME29 Model 35-2
- 1 x 128KB Main Store
- 2 x MDS 20 Double Disk Drives (240 MB Capacity) EDS
- 11 x Work Stations
- 1 x Line Printer 360 (PDS)

Reply to Box No. 1123

DEC PDP 11/45 FOR SALE

- All DEC equipment DEC maintained
- * 256KB Memory (incl. 32KB buffer)
- * EP11C Floating point accelerator
- * 3 x RPO3 40 Mbyte disk drives + controller
- * 2 x TU10 Mag Tape drives + controller
- * DH11 18 line Multiplexer + 1 DL11E
- * 5 x VT52 VDU's + 4 non-DEC VDU's
- * RSTS/E Software

Available April/May, 1981
Offers around £25,000 to:
Gordon Harris (0424) 430824

DARKCREST LTD.

Low cost RSTS/E and RSX11-M Systems, LS11/78 CPU, 256kb MOS, BOX / PWR / Cabinet, two VT100s, 180 cbs LA120, 4 line interfaces plus: 14Mb fxd + 42Mb exch (RK08/7 type) £17,800. Plus: 67Mb fxd DISC + 800/1600 (M.T. £21,500. Plus: Two 67Mb exch (RM02 type) £24,800.

Full line of DEC compatibles - send for 32-page catalogue.

Mermoid Court, 185A Borough High Street, London, SE1
Tel: 01-403 2330/6683 Telex: 893248

1981 FEATURES PROGRAMME

- 19 February
- 5 March
- 26 March
- 16 April
- Software
- Microsystems Preview
- Peripherals
- Communications

Contact: David Hogan on
01-661 3500

VAX TIME

- Waiting for Delivery?
- Try before you buy!
- Remote access VAX timesharing available.

DEMOTAS LIMITED
99-101 Regent St, London W1
01-439 3971

Arden
Printers
For Details
General and Full
Price List

SUPERLATIVE USED COMPUTER EQUIPMENT-AS NEW CONDITION

DEC PROCESSORS PDP 11/03 SD Processor in 34in chassis complete with 16KB MOS Memory and RSX11-M software. £1,700.00 PDP 11/04 Processor in 10in chassis complete with 16KB MOS Memory and RSX11-M software. £1,700.00 PDP 11/34 Processor (open 4) in 10in chassis complete with 128KB MOS Memory, DL11V interface and Programme Front Panel. £3,000.00	DEC DISKS R005-1 2.5 Mag. add-on disk drive £1,650.00 R001-AR 5 Mag. add-on disk drive £1,975.00 R002 14 Mag. add-on disk drive £2,350.00 R007-40 20 Mag. add-on disk drive P.O.A. DEC OPTIONS - PDP11 SERIES 001 LA 4-dot system unit £125.00 001 LB 4-dot system unit £130.00 001 LC 4-dot system unit £135.00 001 LD 4-dot system unit £140.00 001 LE 4-dot system unit £145.00 001 LF 4-dot system unit £150.00 001 LG 4-dot system unit £155.00 001 LH 4-dot system unit £160.00 001 LI 4-dot system unit £165.00 001 LJ 4-dot system unit £170.00 001 LK 4-dot system unit £175.00 001 LL 4-dot system unit £180.00 001 LM 4-dot system unit £185.00 001 LN 4-dot system unit £190.00 001 LO 4-dot system unit £195.00 001 LP 4-dot system unit £200.00 001 LQ 4-dot system unit £205.00 001 LR 4-dot system unit £210.00 001 LS 4-dot system unit £215.00 001 LT 4-dot system unit £220.00 001 LU 4-dot system unit £225.00 001 LV 4-dot system unit £230.00 001 LW 4-dot system unit £235.00 001 LX 4-dot system unit £240.00 001 LY 4-dot system unit £245.00 001 LZ 4-dot system unit £250.00
---	---

WE SELL WE BUY
ELECTRONICBROKERS LTD
All computer equipment bought and sold at the best prices. We also buy and sell computer equipment on consignment. We are the only company in the UK to offer this service. We are also the only company in the UK to offer this service. We are also the only company in the UK to offer this service.

Private Purchaser
requires secondhand
IBM 3330-1, 3830-2
and 3333-1.

Reply Box No. 1122

ICL 8959 Key Edit
System with 10 Key
Stations. 3-years-old
and ICL maintained.

Tel. Cork 961306

TIME SHARING:
● PDP 11-RSTS/E
● Line Printer
● Raw Time
● Accounting
Packages
● Phone: J. Seymour
01-664 8086

PUNCHING PROBLEMS?

We are the established specialists for
**DATA
PREPARATION**
HUGE CAPACITY
01-437 3977 & 488 3824

TEMP & PERM PUNCH OPS

All machines and more
01-323 1100 & 688 3670

RING US NOW FOR PROMPT
INDIVIDUAL & EFFICIENT
SERVICE

House Of Cards
201 Tottenham Court Road
London W1P 8AE

20 North End, Croydon, Surrey

FOR SALE NEW TEXAS 990/1 AT HALF PRICE

Texas 990/1 small business
system, CPU with 84K memory,
dual sided double density
floppy disk drive.

Texas VDU
Printer Interface
System software
Unlocked and in original
packaging
Price: £4,500

Tel: 01-404 0475
Along cheap Ortel equipment